

## **APPENDIX B      AGENCY CONSULTATION**

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

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2008-2996 6

**Department of Energy**

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3393

November 24, 2008

U.S. Department of Army  
Corps of Engineers, Omaha District  
9307 S. Wadsworth Blvd  
Littleton, Colorado 80128-6901

NE Site 1 4S 70w



Attention: Mr. Terry McKee

Subject: Department of Energy's New Southern Access to the National Renewable Energy Laboratory South Table Mountain Site

Pursuant to your recent discussions with Dan Lowery of Battelle Memorial Institute, the purpose of this letter is to provide your agency with additional information regarding the subject project, current vegetation conditions of the **Lena Gulch**, and proposed design measures that would be incorporated into a **roadway** as it crosses Lena Gulch. Please accept this letter as a formal request to provide our agency with the proper permit requirements and guidance pursuant to compliance with Section 404 of the Clean Water Act.

**Background**

As you may be aware, the Department of Energy (DOE) is involved in a multiyear buildout of the National Renewable Energy Laboratory's (NREL) South Table Mountain (STM) Site located in Golden, CO. Traffic studies recently commissioned by DOE to assess the consequences of staff growth at NREL resulting from the buildout have indicated that future traffic congestion at the intersections of Denver West Parkway/Denver West Marriott Boulevard could reach unacceptable levels without an additional entrance. As a result, DOE is considering options for a new southern entrance that would connect the STM site to South Golden Road. Several of the available alternatives for this new access would cross Lena Gulch, a perennial stream beginning in the foothills to the west of the STM site and culminating several miles to the east into Clear Creek.

This proposed action along with other site infrastructure upgrades, a new laboratory building, and an expansion to the Visitor's Center are being evaluated under DOE's NEPA regulations in a Supplemental Environmental Assessment (EA). A more detailed description of the other proposed actions being assessed can be found in the attached Notice of Public Scoping for the Preparation of an Environmental Assessment Supplement for Proposed Site Development Projects at NREL. At this time DOE is evaluating its alternatives for a southern entrance road and does not yet have a preferred alternative. Through this EA process, DOE plans to select a corridor within in which

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more detailed route selection and design work would be performed before any construction would begin.

#### **Proposed Action Summary**

As shown in the attached Figure, four Corridors (A, B, C and D) are being considered at this time. As part of the roadway entrance design, all alternatives would require crossing Lena Gulch and, therefore, may be the subject of potential permit requirements under the Nationwide Permit Program. Alternative A would require a new bridge. Alternatives B and D could use an existing bridge on Kilmer Street, possibly with some upgrades, or a new bridge may be needed. Alternative C would utilize the existing bridge on Isabell Street.

#### **Existing Conditions**

Based on recent field visits conducted in early-November 2008 at proposed roadway crossings of Lena Gulch, a number of riparian areas were identified within or adjacent to onsite drainages. These areas exhibited a number of wetland criteria based on U.S. Fish and Wildlife Service guidelines for delineation of wetlands. These areas could be considered as jurisdictional wetlands based on onsite vegetation and soil conditions and could fall under the jurisdiction of the U.S. Army Corps of Engineers Section 404 regulations.

#### **Proposed Design Measures**

As envisioned, the bridge would be designed to eliminate any need of permanent components (e.g. abutments, truss, supporting materials and decking) within Lena Gulch, thereby reducing any potential impacts to biological or hydrologic resources. Moreover, the construction of the bridge would not require the need to be in the active portion or riparian portions of the gulch.

Based on the low-profile design of the bridge, as well as the use of low-intensity equipment to construct the bridge, disturbance to the Lena Gulch is not expected. The following main activities would be conducted prior to construction activities:

- Survey project site for bridge length and placement
- Test on-site soils for structural compatibility
- Design final bridge shop drawings for agency approval
- Delineate sensitive habitat for avoidance
- Fabricate bridge components off-site
- Establish staging area(s) for approval by agency

The following main activities would be conducted during construction:

- Excavate, by hand, abutments and ready site with pea-gravel
- Place abutments and set on pea-gravel for leveling

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National Renewable Energy Laboratory South Table Mountain Site

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- Place bridge trusses and ancillary components to project site for placement
- Construct bridge deck in-place
- Construct bridge rail in-place

The following main activities would be conducted after construction:

- Consult with agency once bridge has been set in place
- Restore and re-vegetate disturbed areas including abutments, slab foundations and pilings

Construction Schedule

The total construction time for the entire bridge design and fabrication and installation is expected to occur within 30 to 45 days.

- |  |         |
|--|---------|
| ▪ Transport activities                           | 7 days  |
| ▪ Excavation activities to ready site for bridge | 7 days  |
| ▪ Bridge construction activities                 | 10 days |
| ▪ Project restoration activities                 | 5 days  |

To summarize, by way of this letter DOE is requesting that the Corps provide our agency with the proper permit requirements and guidance pursuant to compliance with Section 404 of the Clean Water Act. Thank you for your time and cooperation in this matter and feel free to contact Steve Blazek at 303-275-4723 should you have any questions or should you require additional information.

Sincerely,



Gregory D. Collette  
Acting Assistant Manager  
Laboratory Operations

Enclosures



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DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, OMAHA DISTRICT  
DENVER REGULATORY OFFICE, 9307 S. Wadsworth Boulevard  
LITTLETON, COLORADO 80128-6901

December 2, 2008

Mr. Gregory Collette  
Department of Energy  
Golden Field Office  
1617 Cole Boulevard  
Golden, CO 80401-3393

**RE: Department of Energy's New Southern Access to the National Renewable Energy  
Laboratory South Table Mountain Site, Lena Gulch  
Corps File No. NWO-2008-2996-DEN**

Dear Mr. Collette:

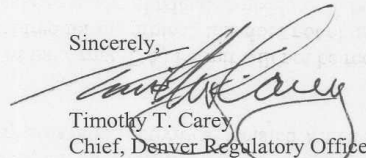
Reference is made to the above-referenced project located in the NE ¼ of Section 1, T4S, R70W, Jefferson County, Colorado. This project has been reviewed by Mr. Terry McKee of my office in accordance with Section 404 of the Clean Water Act under which the U.S. Army Corps of Engineers regulates the discharge of dredged and fill material, and any excavation activity associated with a dredge and fill project in waters of the United States.

Based on the information provided, a Department of the Army (DA) Permit will not be required for work at this site. Although a DA Permit will not be required for the project, this does not eliminate the requirement that other applicable federal, state, and local permits be obtained as needed. If, however, any work associated with this project requires the placement of dredged or fill material, and any excavation associated with a dredged or fill project, either temporary or permanent, in an aquatic site, which may include ephemeral and perennial streams, wetlands, lakes, ponds, drainage ditches and irrigation ditches, this office should be notified by a proponent of the project for Department of the Army permits, changes in permit requirements or jurisdictional determinations pursuant to Section 404 of the Clean Water Act.

Work in an aquatic site should be identified by the **proponent of the project** and be shown on a map identifying the Quarter Section, Township, Range and County and Latitude and Longitude, Decimal Degrees (datum NAD 83) and the dimensions of work in each aquatic site. Any loss of an aquatic site may require mitigation. Mitigation requirements will be determined during the Department of the Army permitting review.

If there are any questions call **Mr. Terry McKee** of my office at (303) 979-4120 and reference **Corps File No. NWO-2008-2996-DEN**.

Sincerely,

  
Timothy T. Carey  
Chief, Denver Regulatory Office

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National Renewable Energy Laboratory South Table Mountain Site

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**Department of Energy**

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3393

November 24, 2008

Mr. Edward Nichols  
State Historic Preservation Officer  
Colorado Historical Society  
1300 Broadway  
Denver, Co 80203  
(303) 866-3355

53787  
AM  
**RECEIVED**

DEC 2 2008

CHS/OAHP

Dear Mr. Nichols:

SUBJECT: U.S. DEPARTMENT OF ENERGY NEW SOUTHERN ENETRANCE TO  
THE NATIONAL RENEWABLE ENERGY LABORATORY'S SOUTH  
TABLE MOUNTAIN SITE (DOE/EA1440S-II)

The purpose of this letter is to notify your agency that the U.S. Department of Energy (DOE) is evaluating alternative corridors to provide a new southern access road into the South Table Mountain Site (STM) site. Further, DOE solicits your review and comments on this proposed action as well as concurrence on the historic resources which might be affected by roadway construction of these proposed corridors. Three of the four corridors (A, B, and D) (Figure Attached) would traverse the Camp George West Historic District located in Jefferson County, Section 36, Township 3 South, Range 70 West, and Section 1, Township 4 South, Range 70 West. Corridor C would connect the STM site with the current Isabell Street and thus have no potential to affect historic resources within the District. ?

DOE will use your information and consider any other factors in its evaluation of corridor options before selecting a single corridor for more detail roadway route selection, design, and impact mitigation if needed. DOE intends to work closely with your office during and after our corridor selection process in the determination of affects, if any, which may result from this action. As you can see from our figure, the corridors as defined are sufficiently wide to avoid historic resources, with the exception of corridor D which follows Kilmer Street with numerous resources adjacent to the street. The other resources that might prove difficult to avoid for all alternatives could be the six-hundred and five-hundred-yard firing lines (FR12) due to their length and locations, but a determination of effect will have to wait for more detailed route selection. Please also note that, at this time, we believe the use of Kilmer Street under corridor D would not require any widening of the current roadway and thus the resources along this route would not be disturbed. We are working with the appropriate roadway agencies to confirm the adequacy of the existing roadway.

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### **Background**

As you may be aware, the Department of Energy (DOE) is involved in a multiyear buildout of the National Renewable Energy Laboratory's (NREL) South Table Mountain Site located in Golden, CO. Traffic studies recently commissioned by DOE to assess the consequences of staff growth at NREL resulting from the buildout have indicated that future traffic congestion at the intersections of Denver West Parkway/Denver West Marriott Boulevard could reach unacceptable levels if an additional entrance to the site was not added. As a result, DOE is considering its options for a new southern entrance that would connect the STM site to South Golden Road.

This proposed action along with other site infrastructure upgrades, a new laboratory building, and an expansion to the Visitor's Center are being evaluated under DOE's NEPA regulations in a Supplemental Environmental Assessment (EA). A more detailed description of the other proposed actions being assessed can be found in the attached Notice of Public Scoping for the Preparation of an Environmental Assessment Supplement for Proposed Site Development Projects at NREL. At this time DOE is evaluating alternatives for a southern entrance road and does not yet have a preferred alternative. Through this EA process, DOE plans to select a corridor within in which more detailed route selection and design work would be performed, and concurrence on a determination of effect (if applicable) would be solicited before any construction would begin.

### ***Resources Potentially Affected***

DOE has reviewed the information available from the National Register of Historic Places on the Camp George West Historic District and has determined that there are thirteen listed structures that contributed to the District's designation and two non-listed, noncontributing resources occur in or near the access corridors currently under review by DOE. Resources and the corridor(s) in which they occur are identified in the table below.

Resource Number	Name	Present within Southern Access Corridor			
		A	B	C	D
<b>Contributing Resources</b>					
12	Mess Hall	No	No	No	Yes
26	Mess Hall	No	No	No	Yes
29	Mess Hall	No	No	No	Yes
33	Small Arms/Ammunition Storage	No	No	No	Yes
45	Headquarters	No	No	No	Yes
48	Recreational Hall	No	Yes	No	Yes

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49	Swimming Pool	No	Yes	No	Yes
50	Pedestrian Underpass	No	No	No	Yes
83	Guard House	No	No	No	Yes
84	Pump House	No	Yes	No	Yes
92	Bridge	No	Yes	No	Yes
113	Bridge	No	Yes	No	Yes
FR 12	Firing Lines	Yes	Yes	No	Yes
<b>Non-Contributing Resources</b>					
(A)	Warehouse	No	No	No	Yes
104	Golden Clubhouse	Yes	Yes	No	Yes

(A) The number designation on this warehouse cannot be determined from the copies of the designation report in our files. This metal roofed and sided warehouse lies on Kilmer Street just west of the gateway arch to the Pleasantview Community Park.

If your records indicate additional resources within these corridors that are not listed above please include the identification of any such resources in your response to this letter.

DOE appreciates your participation in this process of resource identification and will work closely with you and your staff as we comply with Section 106 of the National Historic Preservation Act and with the Advisory Council on Historic Preservation regulations.

We look forward to further consultations on this project. Please contact Steve Blazek at (303) 275-4723 for additional information.

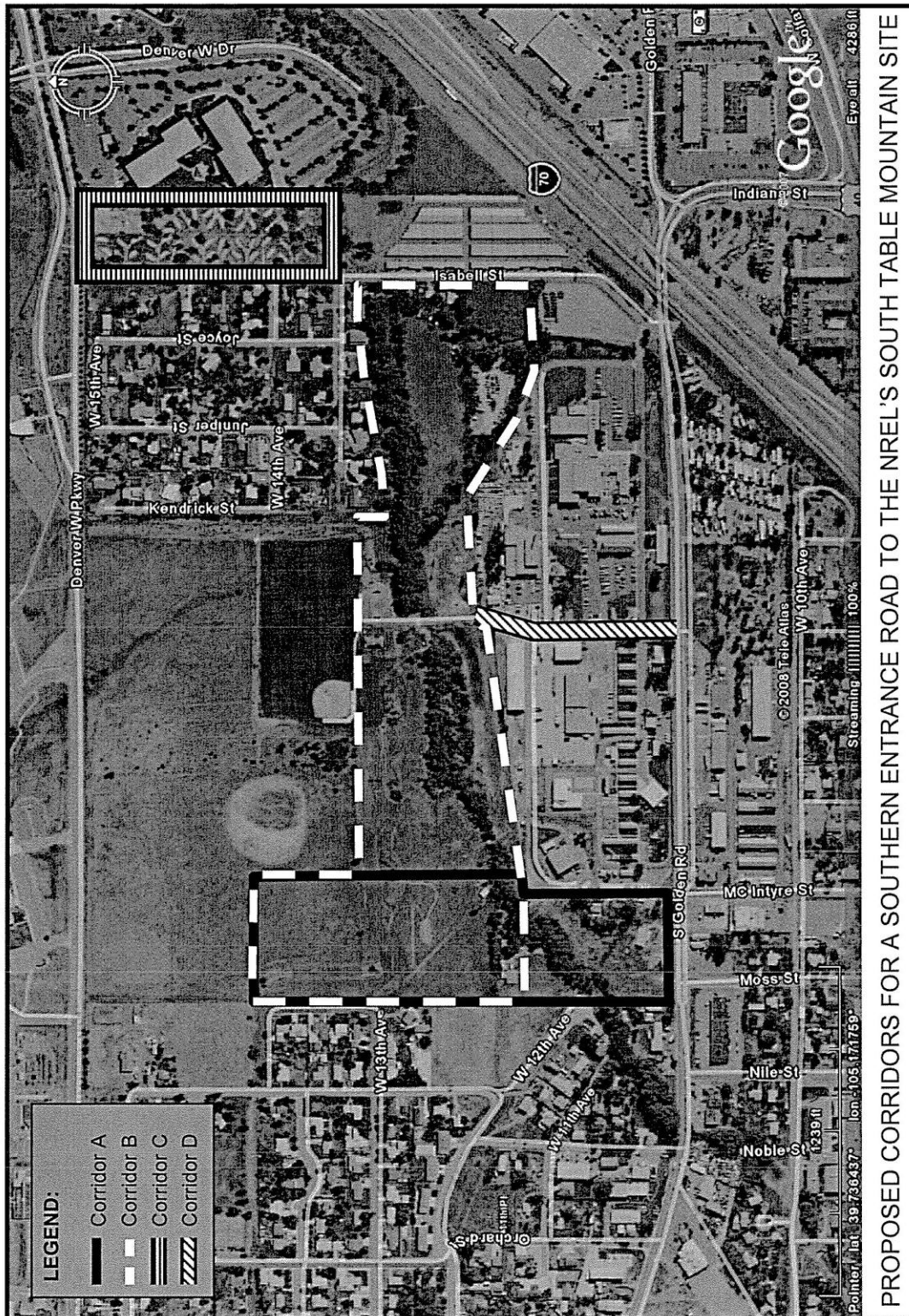
Sincerely,



Gregory D. Collette  
Acting Assistant Manager  
Laboratory Operations

Enclosures






PROPOSED CORRIDORS FOR A SOUTHERN ENTRANCE ROAD TO THE NREL'S SOUTH TABLE MOUNTAIN SITE



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 OFFICE of ARCHAEOLOGY and HISTORIC PRESERVATION

December 8, 2008

Gregory D. Collette  
Acting Assistant Manager  
Laboratory Operations  
Department of Energy  
Golden Field Office  
1617 Cole Boulevard  
Golden, CO 80401-3393

Re: New Southern Entrance to the National Renewable Energy Laboratory South Table Mountain Site (DOE/EA 14402-II) (CHS #53787)


Dear Mr. Collette:

Thank you for your correspondence dated November 24, 2008 and received by our office on December 2, 2008 regarding the consultation of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

After review of the provided information, we are not able to complete our review of your project under Section 106. In order to review this project under Section 106, we need to consult with your office regarding the Area of Potential Effects (APE) and identification of other consulting parties, as stipulated in 36 CFR 800.4(a). Once we have an appropriate APE boundary and consulting parties notified of the project, we can consult on the identification of historic properties and assessment of adverse effect. We recommend contacting our office regarding the APE and identification of other consulting parties.

Please note that our compliance letter does not end the 30-day review period provided to other consulting parties. If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Manager, at (303) 866-4678.

Sincerely,

  
Edward C. Nichols  
State Historic Preservation Officer

cc: Steve Blazek/Department of Energy

 COLORADO HISTORICAL SOCIETY

1300 BROADWAY DENVER COLORADO 80203 TEL 303/866-3395 FAX 303/866-2711 [www.coloradohistory-oahp.org](http://www.coloradohistory-oahp.org)

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DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, OMAHA DISTRICT  
DENVER REGULATORY OFFICE, 9307 SOUTH WADSWORTH BOULEVARD  
LITTLETON, COLORADO 80128-6901

April 27, 2009

Ms. Genny Braus  
Senior Environmental Specialist  
NREL - Environmental Health and Safety  
1617 Cole Boulevard, Mail Stop 730  
Golden, CO 80401

**RE: National Renewable Energy Laboratory, Drainage Review  
Corps File No. NWO-2009-1014-DEN**

Dear Ms. Braus:

Reference is made to your April 24, 2009 site visit with Mr. Terry McKee of my office concerning the above-mentioned project located in the S ½ of Section 36, T3S, R70W, Jefferson County, Colorado. During the site visit the below drainages were examined and identified as upland swales vegetated with upland vegetation:

1. JeffCo Easement Drainage
2. East Drainage
3. Middle Drainage
4. Middle West Drainage
5. West Drainage
6. Road Side Drainages and Trickle Channel Drainages

An approved jurisdictional determination (JD) has been completed for the above mentioned upland swales. The JD's for these swales are attached to this letter. If you are not in agreement with the JD decision, you may request an administrative appeal under regulation 33 CFR 331, by using the attached Appeal Form and Administrative Appeal Process form. The request for appeal must be received within 60 days from the date of this letter. If you would like more information on the jurisdictional appeal process, contact this office. It is not necessary to submit a Request for Appeal if you do not object to the JD.

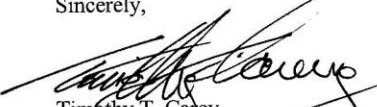
The above upland swales have been reviewed in accordance with Section 404 of the Clean Water Act under which the U.S. Army Corps of Engineers regulates the discharge of dredged and fill material, and any excavation activity associated with a dredge and fill project in waters of the United States. A Department of the Army (DA) Permit will not be required for work at in these upland swales. Although a DA Permit will not be required for work in these swales, this does not eliminate the requirement that other applicable federal, state, and local permits be obtained as needed.

This JD is valid for a period of five years from the date of this letter, unless new information warrants revisions of the JDs before the expiration date, or unless the Corps has identified, after a possible public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

The Omaha District, Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete our Customer Service Survey found on our website at <http://per2.nwp.usace.army.mil/survey.html>. If you do not have Internet access, you may call and request a paper copy of the survey that you can complete and return to us by mail or fax. (Completing the survey is a voluntary action)

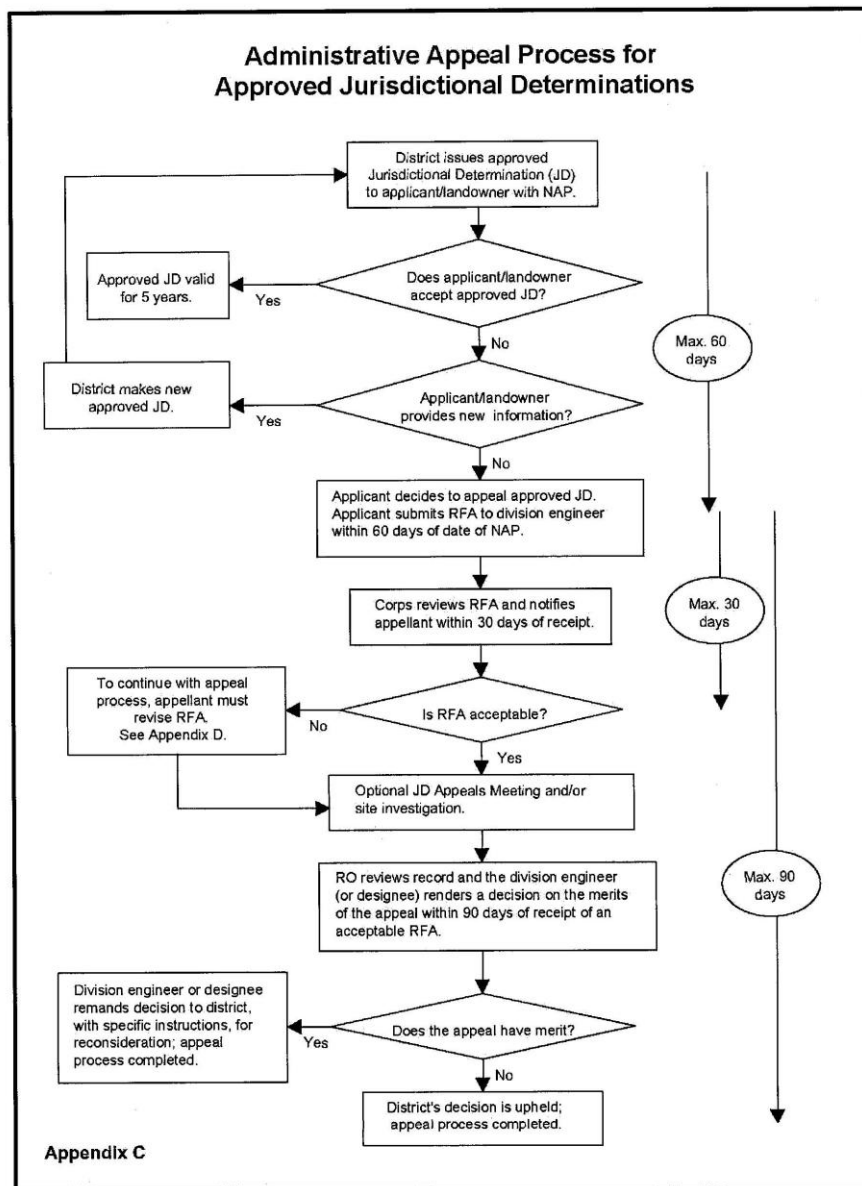
If there are any questions call **Mr. Terry McKee** at (303) 979-4120 and reference Corps No. **NWO-2009-1014-DEN**.

Sincerely,



Timothy T. Carey  
Chief, Denver Regulatory Office

tm



NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant:	File Number:	Date:
Attached is:	See Section below	
INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
PERMIT DENIAL	C	
APPROVED JURISDICTIONAL DETERMINATION	D	
PRELIMINARY JURISDICTIONAL DETERMINATION	E	
<p>SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <a href="http://usace.army.mil/inet/functions/cw/cecwo/reg">http://usace.army.mil/inet/functions/cw/cecwo/reg</a> or Corps regulations at 33 CFR Part 331.</p>		
<p><b>A: INITIAL PROFFERED PERMIT:</b> You may accept or object to the permit.</p> <ul style="list-style-type: none"> <li><b>ACCEPT:</b> If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.</li> <li><b>OBJECT:</b> If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.</li> </ul>		
<p><b>B: PROFFERED PERMIT:</b> You may accept or appeal the permit</p> <ul style="list-style-type: none"> <li><b>ACCEPT:</b> If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.</li> <li><b>APPEAL:</b> If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.</li> </ul>		
<p><b>C: PERMIT DENIAL:</b> You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.</p>		
<p><b>D: APPROVED JURISDICTIONAL DETERMINATION:</b> You may accept or appeal the approved JD or provide new information.</p> <ul style="list-style-type: none"> <li><b>ACCEPT:</b> You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.</li> <li><b>APPEAL:</b> If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.</li> </ul>		
<p><b>E: PRELIMINARY JURISDICTIONAL DETERMINATION:</b> You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.</p>		



**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

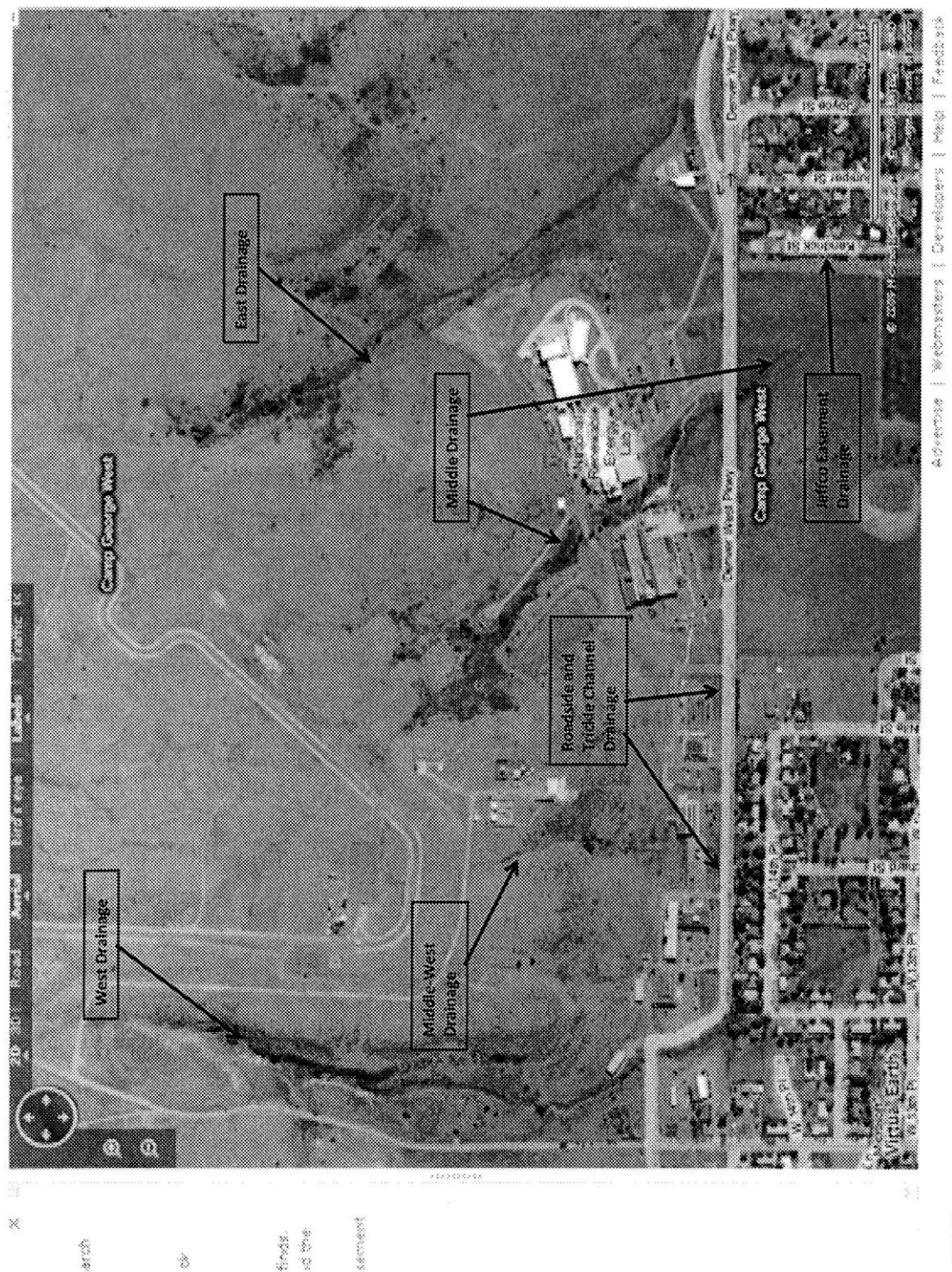
If you have questions regarding this decision and/or the appeal process you may contact:

Timothy T. Carey  
Chief, Denver Regulatory Office  
9307 South Wadsworth Boulevard  
Littleton, CO 80128  
(303) 979-4120

If you only have questions regarding the appeal process you may also contact:

US Army Corps of Engineers, Northwestern Division  
Attn: David Gesl, Appeal Review Officer  
1125 NW Couch St.  
Portland, OR 97209-4141  
Telephone (503) 808-3825

**RIGHT OF ENTRY:** Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.



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National Renewable Energy Laboratory South Table Mountain Site

APPROVED JURISDICTIONAL DETERMINATION FORM  
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):** April 27, 2009

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:**

Denver Regulatory Office, National Renewable Energy Laboratory, NWO-2009-1014-DEN

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** West Drainage

State: CO County/parish/borough: Jefferson City: Golden

Center coordinates of site (lat/long in degree decimal format): Lat. 39.74131 N; Long. -104.17376 W

Universal Transverse Mercator:

Name of nearest waterbody: Lena Gulch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: NA

Name of watershed or Hydrologic Unit Code (HUC): 10190002

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☒ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☒ Office (Desk) Determination. Date: April 24, 2009

☒ Field Determination. Date(s): April 24, 2009

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):<sup>1</sup>**

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

**c. Limits (boundaries) of jurisdiction based on: Established by OHWM.**

Elevation of established OHWM (if known):

**2. Non-regulated waters/wetlands (check if applicable):<sup>3</sup>**

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: Upland swale vegetated with upland vegetation

<sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

<sup>3</sup> Supporting documentation is presented in Section III.F.



**SECTION III: CWA ANALYSIS**

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): No OHWM physical indicators

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: NREL – Environmental and Safety
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
  - ☐ Corps navigable waters' study:
- ☒ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24000, Morrison
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date):  
or ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter: .
- ☒ Applicable/supporting case law: Rapanos and Carabell cases.
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

**B. ADDITIONAL COMMENTS TO SUPPORT JD:**

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

APPROVED JURISDICTIONAL DETERMINATION FORM  
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):** April 27, 2009

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:**

Denver Regulatory Office, National Renewable Energy Laboratory, NWO-2009-1014-DEN

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** JeffCo Easement Drainage

State: CO County/parish/borough: Jefferson City: Golden

Center coordinates of site (lat/long in degree decimal format): Lat. 39.74131 N; Long. -104.17376 W

Universal Transverse Mercator:

Name of nearest waterbody: Lena Gulch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: NA

Name of watershed or Hydrologic Unit Code (HUC): 10190002

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☒ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☒ Office (Desk) Determination. Date: April 24, 2009

☒ Field Determination. Date(s): April 24, 2009

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):**<sup>1</sup>

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

**c. Limits (boundaries) of jurisdiction based on:** Established by OHWM.

Elevation of established OHWM (if known):

**2. Non-regulated waters/wetlands (check if applicable):**<sup>3</sup>

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: Upland swale vegetated with upland vegetation

<sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

<sup>3</sup> Supporting documentation is presented in Section III.F.



Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

**SECTION III: CWA ANALYSIS**

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
- ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): **No OHWM physical indicators**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **NREL – Environmental and Safety**
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☒ U.S. Geological Survey Hydrologic Atlas:
- ☐ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: **1:24000, Morrison**
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): .
- or ☐ Other (Name & Date): .
- ☐ Previous determination(s). File no. and date of response letter: .
- ☒ Applicable/supporting case law: **Rapanos and Carabell cases.**
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

**B. ADDITIONAL COMMENTS TO SUPPORT JD:**

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

APPROVED JURISDICTIONAL DETERMINATION FORM  
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):** April 27, 2009

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:**

Denver Regulatory Office, National Renewable Energy Laboratory, NWO-2009-1014-DEN

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** East Drainage

State: CO County/parish/borough: Jefferson City: Golden

Center coordinates of site (lat/long in degree decimal format): Lat. 39.74131 N; Long. -104.17376 W

Universal Transverse Mercator:

Name of nearest waterbody: Lena Gulch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: NA

Name of watershed or Hydrologic Unit Code (HUC): 10190002

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☒ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☒ Office (Desk) Determination. Date: April 24, 2009

☒ Field Determination. Date(s): April 24, 2009

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):<sup>1</sup>**

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

**c. Limits (boundaries) of jurisdiction based on: Established by OHWM.**

Elevation of established OHWM (if known):

**2. Non-regulated waters/wetlands (check if applicable):<sup>3</sup>**

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: Upland swale vegetated with upland vegetation

<sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

<sup>3</sup> Supporting documentation is presented in Section III.F.

**SECTION III: CWA ANALYSIS**

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
- ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): No OHWM physical indicators.

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: NREL – Environmental and Safety
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☒ U.S. Geological Survey Hydrologic Atlas: .
- ☐ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24000, Morrison
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date):  
or ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter: .
- ☒ Applicable/supporting case law: Rapanos and Carabell cases.
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

**B. ADDITIONAL COMMENTS TO SUPPORT JD:**



Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

APPROVED JURISDICTIONAL DETERMINATION FORM  
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):** April 27, 2009

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:**

Denver Regulatory Office, National Renewable Energy Laboratory, NWO-2009-1014-DEN

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** Middle Drainage

State: CO County/parish/borough: Jefferson City: Golden

Center coordinates of site (lat/long in degree decimal format): Lat. 39.74131 N; Long. -104.17376 W

Universal Transverse Mercator:

Name of nearest waterbody: Lena Gulch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: NA

Name of watershed or Hydrologic Unit Code (HUC): 10190002

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☒ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☒ Office (Desk) Determination. Date: April 24, 2009

☒ Field Determination. Date(s): April 24, 2009

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):**<sup>1</sup>

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

**c. Limits (boundaries) of jurisdiction based on:** Established by OHWM.

Elevation of established OHWM (if known):

**2. Non-regulated waters/wetlands (check if applicable):**<sup>3</sup>

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: Upland swale vegetated with upland vegetation

<sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

<sup>3</sup> Supporting documentation is presented in Section III.F.

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

**SECTION III: CWA ANALYSIS**

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
- ☐ Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): No OHWM physical indicators

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: NREL - Environmental and Safety
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☒ U.S. Geological Survey Hydrologic Atlas:
- ☐ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24000, Morrison
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date):  
or ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter: .
- ☒ Applicable/supporting case law: Rapanos and Carabell cases.
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

**B. ADDITIONAL COMMENTS TO SUPPORT JD:**



Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

APPROVED JURISDICTIONAL DETERMINATION FORM  
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):** April 27, 2009

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:**

Denver Regulatory Office, National Renewable Energy Laboratory, NWO-2009-1014-DEN

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** Middle West Drainage

State: CO County/parish/borough: Jefferson City: Golden

Center coordinates of site (lat/long in degree decimal format): Lat. 39.74131 N; Long. -104.17376 W

Universal Transverse Mercator:

Name of nearest waterbody: Lena Gulch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: NA

Name of watershed or Hydrologic Unit Code (HUC): 10190002

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☒ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☒ Office (Desk) Determination. Date: April 24, 2009

☒ Field Determination. Date(s): April 24, 2009

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.  
Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):**<sup>1</sup>

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

**c. Limits (boundaries) of jurisdiction based on:** Established by OHWM.

Elevation of established OHWM (if known):

**2. Non-regulated waters/wetlands (check if applicable):**<sup>3</sup>

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.  
Explain: Upland swale vegetated with upland vegetation

<sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

<sup>3</sup> Supporting documentation is presented in Section III.F.

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

**SECTION III: CWA ANALYSIS**

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
- ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): No OHWM physical indicators

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: NREL - Environmental and Safety
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☒ U.S. Geological Survey Hydrologic Atlas:
- ☐ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24000, Morrison
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date):  
or ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter: .
- ☒ Applicable/supporting case law: Rapanos and Carabell cases.
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

**B. ADDITIONAL COMMENTS TO SUPPORT JD:**

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

APPROVED JURISDICTIONAL DETERMINATION FORM  
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

**SECTION I: BACKGROUND INFORMATION**

**A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):** April 27, 2009

**B. DISTRICT OFFICE, FILE NAME, AND NUMBER:**

Denver Regulatory Office, National Renewable Energy Laboratory, NWO-2009-1014-DEN

**C. PROJECT LOCATION AND BACKGROUND INFORMATION:** Road Side Drainages and Trickle Channel Drainages

State: CO County/parish/borough: Jefferson City: Golden

Center coordinates of site (lat/long in degree decimal format): Lat. 39.74131 N; Long. -104.17376 W

Universal Transverse Mercator:

Name of nearest waterbody: Lena Gulch

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: NA

Name of watershed or Hydrologic Unit Code (HUC): 10190002

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☒ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

**D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☒ Office (Desk) Determination. Date: April 24, 2009

☒ Field Determination. Date(s): April 24, 2009

**SECTION II: SUMMARY OF FINDINGS**

**A. RHA SECTION 10 DETERMINATION OF JURISDICTION.**

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.  
Explain:

**B. CWA SECTION 404 DETERMINATION OF JURISDICTION.**

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

**1. Waters of the U.S.**

**a. Indicate presence of waters of U.S. in review area (check all that apply):**<sup>1</sup>

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters<sup>2</sup> (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

**b. Identify (estimate) size of waters of the U.S. in the review area:**

Non-wetland waters: linear feet: width (ft) and/or acres.  
Wetlands: acres.

**c. Limits (boundaries) of jurisdiction based on:** Established by OHWM.

Elevation of established OHWM (if known):

**2. Non-regulated waters/wetlands (check if applicable):**<sup>3</sup>

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: Upland swale vegetated with upland vegetation

<sup>1</sup> Boxes checked below shall be supported by completing the appropriate sections in Section III below.

<sup>2</sup> For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

<sup>3</sup> Supporting documentation is presented in Section III.F.



**SECTION III: CWA ANALYSIS**

**F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):**

- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): **No OHWM physical indicators**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

**SECTION IV: DATA SOURCES.**

**A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):**

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **NREL – Environmental and Safety**
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☒ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: **1:24000, Morrison**
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date):  
or ☐ Other (Name & Date):
- ☐ Previous determination(s). File no. and date of response letter: .
- ☒ Applicable/supporting case law: **Rapanos and Carabell cases.**
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

**B. ADDITIONAL COMMENTS TO SUPPORT JD:**

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

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**Department of Energy**

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3305

07 August 2009

Ms. Susan Linner  
U.S. Fish and Wildlife Service  
Ecological Services  
Colorado Field Office  
P.O. Box 25486, DFC (MS 65412)  
Denver, Colorado 80225-0486

SUBJECT: PREBLES MEADOW JUMPING MOUSE HABITAT ASSESSMENT AT LENA GULCH

In compliance with the U.S. Fish and Wildlife Service Preble's Meadow Jumping Mouse Survey Guidelines, Revised April 2004, we have conducted a habitat assessment along Lena Gulch in documenting baseline conditions for conducting a supplemental environmental assessment for NREL's South Table Mountain (STM) Campus.

The US Department of Energy (DOE) is currently preparing an Environmental Assessment (EA) Supplement for five proposed Site Development Projects at the National Renewable Energy Laboratory's STM site: 1) Energy Systems Integration Facility (ESIF), 2) expansion of campus infrastructure, 3) Waste Handling Facility (WHF) expansion, 4) Visitor's Center expansion, and 5) the addition of a second full service access road (secondary access) to STM. The attached habitat assessment for the Preble's mouse is needed to determine baseline conditions for the secondary access portion of the EA and represents an effort by DOE to afford the U.S. Fish and Wildlife Service an opportunity to be involved early in project planning. This habitat assessment determines the potential for affecting the Preble's mouse, a federally protected species in Colorado.

Please review the attached report, prepared by Thomas Ryon (Federal Permit No. TE081867-0) of our NREL staff and provide a response at your earliest convenience. We understand that the U.S. Fish and Wildlife Service has 30 days to respond to such reports and are planning our EA schedule accordingly.

DOE plans to complete a draft EA for Public Review by September 2009. Beyond your response to this report, we welcome your input throughout the NEPA process.

Sincerely,

*Kristin Kenwin*

*for* Steve Blazek, NEPA Compliance Officer

Federal Recycling Program



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National Renewable Energy Laboratory  
*Innovation for Our Energy Future*

August 3, 2009

Ms. Susan Linner  
U.S. Fish and Wildlife Service  
Ecological Services  
Colorado Field Office  
P.O. Box 25486, DFC (MS 65412)  
Denver, Colorado 80225-0486

**RE: LENA GULCH ROAD CROSSING – GOLDEN, COLORADO**

Dear Ms. Linner,

On July 20, 2009, I conducted a site visit of the proposed **Lena Gulch Road Crossing** study area to assess the potential for the development of a road crossing over Lena Gulch to affect Preble's meadow jumping mouse (Preble's mouse) habitat. The National Renewable Energy Lab is considering a second full service access road from South Golden Road to the South Table Mountain (STM) Complex to accommodate future growth at the facility. The road would likely cross Lena Gulch to create a southern route for STM access. Figure 1 presents the project area.

The US Department of Energy (DOE) is currently preparing an Environmental Assessment (EA) Supplement for five proposed Site Development Projects at the National Renewable Energy Laboratory's STM site: 1) Energy Systems Integration Facility (ESIF), 2) expansion of campus infrastructure, 3) Waste Handling Facility (WHF) expansion, 4) Visitor's Center expansion, and 5) the addition of a second full service access road (secondary access) to STM. This habitat assessment for the Preble's mouse is needed to determine baseline conditions for the secondary access portion of the EA and represents an effort by DOE to afford the U.S. Fish and Wildlife Service an opportunity to be involved early in project planning. This habitat assessment determines the potential for affecting the Preble's mouse, a federally protected species in Colorado.

**Project Location**

The project location is north of I-70 and west of Denver West Parkway on a portion of the former Camp George West National Guard facility in Jefferson County. The land within the project area includes private land and land currently owned by Jefferson County Open Space and leased by the Pleasant View Metropolitan District (T04S, R70W, SEC 01, NE1/4 – Morrison Quadrangle-Figure 1). The UTM coordinates (NAD83) representing the upstream and downstream extents of the project area under consideration are upstream: Zone 13, 4398241mN, 484740mE; downstream: Zone 13, 4398582mN and 485724mE. Adjacent properties include the Pleasant View Subdivision to the west, NREL to the north, the Colorado State Patrol Academy and correctional facility to the south, and the Richards Heights subdivision and a larger private parcel to the east. Access to the site is from South Golden Road and Kilmer Street.

Susan Linner  
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### **Vegetation and Habitat**

Lena Gulch originates in the foothills in the Apex Park Open Space west of the Heritage Square Amusement Park. The gulch continues east and is often conveyed in concrete canals through the Golden area. Lena Gulch becomes forested as it crosses South Golden Road with typical tree species of riparian areas in eastern Colorado. After crossing two private parcels, Lena Gulch crosses into the Pleasant View Community Park and this reach extends through the park for approximately ½ mile. Once the drainageway crosses back into private land, it again becomes channelized and adjacent land use encroaches as Lena Gulch crosses through urban and suburban landscapes until it reaches its confluence with Clear Creek near the intersection of 44<sup>th</sup> Avenue and Kipling Street.

Common trees along this reach within Pleasant View Community Park include plains cottonwood (*Populus deltoides*), peachleaf willow (*Salix amygdaloides*), Russian olive (*Elaeagnus angustifolia*), green ash (*Fraxinus pennsylvanica*), and Siberian elm (*Ulmus pumila*) (Photo 1). Shrubs are localized along the riparian zone and include chokecherry (*Prunus virginiana*), wild plum (*Prunus americana*), and red hawthorn (*Crataegus erythropoda*). Only one small area along Lena Gulch, supports sandbar willow (*Salix exigua*). Understory vegetation consists mostly of grasses including smooth brome (*Bromus inermis*), reed canarygrass (*Phalaris arundinacea*), and tall fescue (*Schedonorus phoenix*) (Photo 2).

Upland vegetation includes grasses and a dominance of weedy herbs. Dominant plants include western wheat grass (*Pascopyrum smithii*), crested wheat grass (*Agropyron cristatum*), smooth brome, cheatgrass (*Bromus tectorum*), and fringe sage (*Artemisia ludoviciana*).

Remnant drainageways remain, north of Lena Gulch and a patch (about ¼ acre) of sandbar willow remains along one of the larger drainageways (Photo 3). These drainageways were more evident before Pleasant View Metro District began re-engineering of the drainage patterns across the site. Also, the entire site was likely disturbed and reworked during operations of Camp Georg West and during decommissioning.

Lena Gulch has an incised channel (Photo 4) throughout this reach and overbank flooding appears limited to a few locations. Recently, the Pleasant View Metro District has created a side channel to the south of the natural drainage for wetland mitigation and flood storage (Photo 5). This area was excavated and lined with rip-rap and is now supporting robust cattail (*Typha latifolia*) stands and diverse wetland vegetation upgradient from the cattails.

### **History of Trapping and Habitat Assessments in the General Area**

Lena Gulch at the Camp George West site was trapped previously (Kane 1999). No Preble's mice were captured during this trapping effort. An interesting observation from this report and an ecological report (Anderson 1999) was the reporting of willows and other shrubs in the understory of the riparian zone. Currently, the riparian area supports only one small patch of sandbar willow and a larger patch off-channel. These past reports seem to indicate that shrubs was much more widespread 10 years ago.

Susan Linner  
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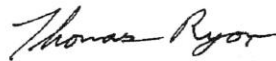
Once Lena Gulch passes under Interstate 70 near Denver West Parkway, it enters the Denver Urban Drainage Block Clearance Area. Considering past trapping and the Lena Gulch drainageway, the riparian area found within this study area is isolated and does not support Preble's mouse habitat given the history of the area and the continued human presence and disturbance the site has experienced. Additionally, succession or stream processes (i.e., increased channel down-cutting) have eliminated riparian shrub communities once present at the site.

#### Recommendations

Given the past trapping results, the history of the site, and the relative isolation of this site in a surrounding urban/suburban landscape, it seems very unlikely that Lena Gulch supports a population of Preble's mice. Any impacts from the development of a road and associated creek crossing would not impact the Preble's mouse. Therefore, I recommend that this area be disqualified as habitat for the Preble's mouse. It may also be appropriate to incorporate this area of Lena Gulch into the Denver Urban Drainage Block Clearance Area.

I ask that you provide written concurrence to this habitat assessment if you agree with the disqualification. If you have further questions or concerns regarding this assessment, please contact me.

Sincerely,



Thomas Ryon, Wildlife Biologist

Cc: Tom Anderson – Battelle  
Steve Blazek – DOE, Golden Field Office  
John Eickhoff – EHS, NREL

#### References

Anderson & Company. 1999. Preble's mouse trapping at Camp George West park site. Prepared for Pleasantview Metropolitan District and The Norris Dullea Company. July. 10+ photos and appendix.

Kane, D. 1999. Preble's mouse trapping at Camp George West park site. Prepared for Pleasantview Metropolitan District and The Norris Dullea Company. September. 11 ppt+ photos and appendix.

Susan Linner  
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Photo 1. Riparian forest gallery line Lena Gulch.



Photo 2. Understory along Lena Gulch is primarily grasses.

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Photo 3. An isolated patch of willow shrubs found north of Lena Gulch. Lena Gulch is in the background of this photo with the willow patch in the mid-ground.



Photo 4. Lena Gulch is incised for most of its length through the Pleasant View Park.

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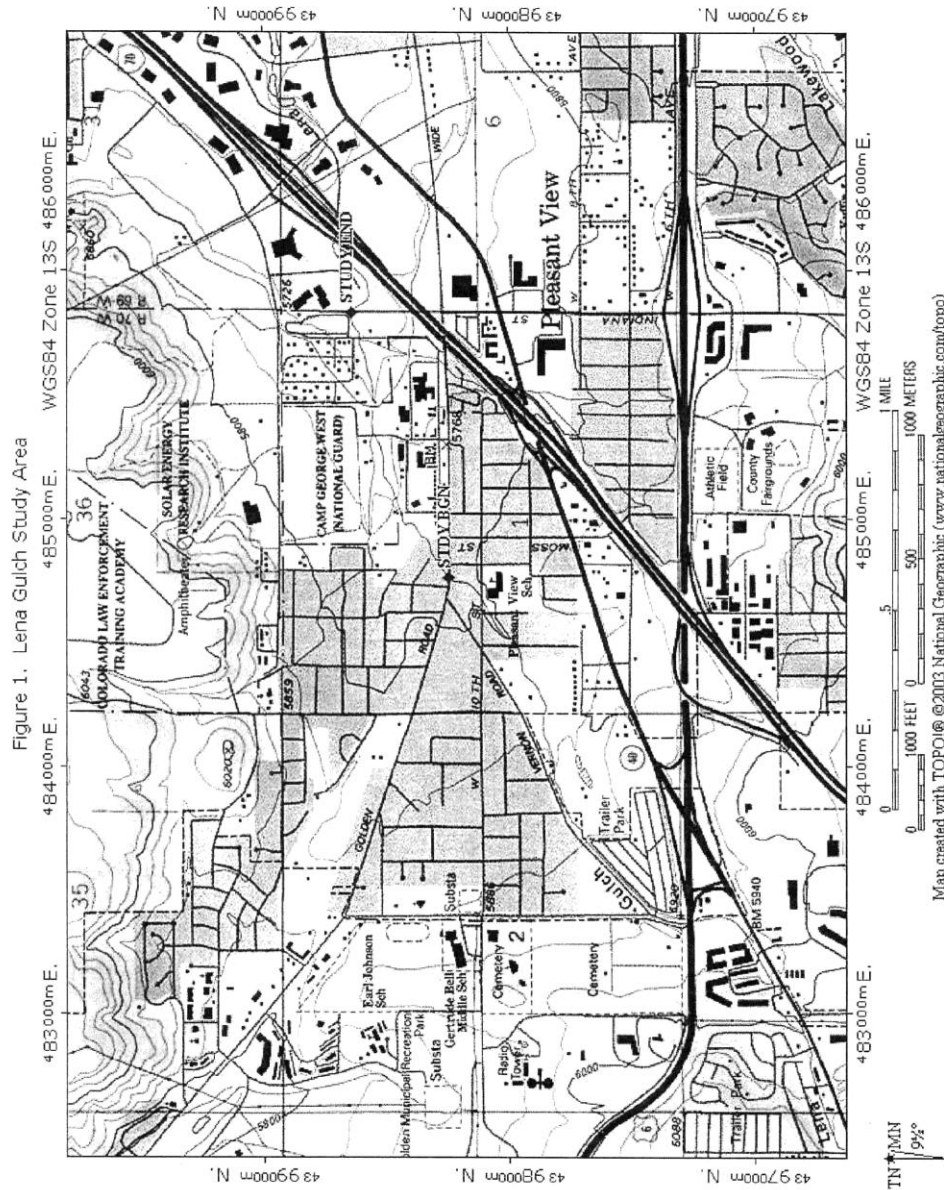
1617 Cole Blvd. • Golden, CO 80401-3393 • (303) 275-3000 • NREL is a national laboratory of the U.S. Department of Energy Office of Energy Efficiency & Renewable Energy, operated by the Alliance for Sustainable Energy, LLC



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Photo 5. Constructed wetlands and flood storage channel adjacent to the south bank of Lena Gulch.



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**U.S. Fish & Wildlife Service**  
**Colorado Field Office**  
**Preble's Meadow Jumping Mouse**  
**Survey Field Data Compilation Form**

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Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

**Preble's Meadow Jumping Mouse, *Zapus hudsonius preblei***

**2005 Survey Field Data Compilation Form**

☐ TRAPPING SURVEY ☒ EVALUATED, NOT TRAPPED

Fill out both sections 1 and 2 if trapping survey, fill out section 1 only if habitat evaluation (ie. not trapped). Compilation forms needed for updated habitat evaluations and site disqualification requests.

**SECTION 1**

**Surveyor:**

Date of Site/Habitat Assessment 20 July 2009  
Organization/Company National Renewable Energy Laboratory  
Full Name(s) Tom Ryon

**Location:**

Project Name (if applicable) Environmental Assessment of the Southern Access Route from the NREL South Table Mesa Campus.  
Project Description (nearby road intersection, type of impact, etc.) South Golden Road and considering several potential intersections but only one will be chosen. Included are Quaker Street, Moss Street, McIntyre Street, Kilmer Street, and Isabella Street. Project will likely be a road crossing of Lena Gulch.

U.S.G.S. Quad Name Morrison County Jefferson Elevation 5,810 to 5730 feet  
Township(s) 4S Range(s) 70W Section(s) 1  
¼ Section(s) NE

UTM Coordinates, Zone 13 Northing 484740 to 485724m Easting 4398241 to 4398582m

UTM Coordinate Datum NAD27 ☐ NAD83 ☒

Directions to Location I-70 to West Colfax Blvd, South on Colfax to South Golden Road, North on South Golden Road to Isabell to bridge crossing over Lena Gulch. Travel upstream on foot to where Lena Gulch goes under South Golden Road.

Land Ownership Jefferson County Open Space – Leased by Pleasant View Metro District

**Habitat:**

General Habitat Description : Riparian mixed gallery forest including Plains Cottonwood and Peachleaf Willow surrounded by grasslands and upland swales

Dominant Overstory Plant Community: mixed riparian forest of cottonwood and non native tree species including plains cottonwood, peachleaf willow, Russian olive, green ash, and Siberian elm.

Dominant Understory Plant: Community grass and minor herb component. Nearly completely lacking a shrub component.

Current Land Use open space

Drainage Name: Lena Gulch Type: Perennial Stream XXXXXX  
Ephemeral Stream                      Pond/Lake                      Ditch                      Other



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Ecological Services  
Colorado Field Office  
P.O. Box 25486, DFC (65412)  
Denver, Colorado 80225-0486

IN REPLY REFER TO:  
ES/CO: T&E/PMJM/other  
65412-2009-I-0553

AUG 20 2009

Steve Blazek  
Department of Energy, Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3305

Dear Mr. Blazek:

We are responding to your letter of August 07, 2009, requesting site disqualification under the authority conferred to the U.S. Fish and Wildlife Service (Service) by the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*). The Service has reviewed the Preble's meadow jumping mouse, *Zapus hudsonius preblei* (Preble's), habitat assessment report for proposed Department of Energy's proposed **Lena Gulch Road Crossing** in Jefferson County, Colorado (Section 1, Township 4 South, Range 70 West).

Based on the information provided, the Service finds the report acceptable and agrees that a population of Preble's is not likely to be present within the subject area. The Service concludes that the proposed crossing should not have direct adverse effects on Preble's or Preble's habitat. Thus, this site is disqualified for consideration under provisions of the ESA.

Please note that this clearance is valid for one year from the date of this letter. Should additional information regarding listed or proposed species become available, this determination may be reconsidered under the ESA. If the proposed project has not commenced within one year, please contact the Colorado Field Office to request a clearance extension.

If we can be of further assistance, please contact Peter Plage of my staff at (303) 236-4750.

Sincerely,

Susan C. Linner  
Colorado Field Supervisor

pc: Plage

PPlage:PMJMSurvey\2009.11:0822.09





**Department of Energy**

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3305

August 11, 2009

Mr. Edward Nichols  
State Historic Preservation Officer  
Colorado Historical Society  
1300 Broadway  
Denver, Co 80203  
(303) 866-3355

Dear Mr. Nichols:

SUBJECT: CURRENT STATUS OF U.S. DEPARTMENT OF ENERGY NEW SECOND  
FULL ACCESS ROAD TO THE NATIONAL RENEWABLE ENERGY LABORATORY'S  
SOUTH TABLE MOUNTAIN SITE (DOE/EA1440S-II)

The purpose of this letter is to provide you with updated information regarding the U.S. Department of Energy's (DOE) plan to evaluate alternative corridors for a potential new access road into the National Renewable Energy Laboratory (NREL) South Table Mountain Site (STM) site. Since our last correspondence, in the winter of 2008, DOE has worked with other Federal (US Fish & Wildlife, Army Corps of Engineers), State (Colorado Department of Transportation, Colorado Natural Heritage Office), and local agencies (Jefferson County, Lakewood, Golden, Pleasant View Metro) and private land owners to characterize the alternative corridors available to DOE for a new site entrance. Through this process we have modified the corridors under consideration and added Quaker Street to the range of alternatives under consideration, which are shown on Figures A-1 and A-2 in Appendix A.

We met recently with Ms. Amy Pallante and Ms. Sarah Rothwell from your office and obtained new information about historic resources in the vicinity of our corridors. For your information, we have included summary information and photographs regarding the resources within Camp George West that could be affected (Appendix A), and have provided the information made available from the data base search provided by Ms. Rothwell for the other resources shown on Figures A-1 and A-2 (Appendix B). Additionally, we must advise that the Golden Gun Club Clubhouse, a non contributing resource #104 in the National Register Forms prepared by the Simmons of Front Range Associates in September 1992, was destroyed in an arson fire the weekend of July 25-26, 2009.

Since our last correspondence, our traffic engineers have further reviewed Kilmer Street under corridor D and reversed our previous determination that this alternative could be implemented without widening the current roadway. Thus, resources along this route could be disturbed if this alternative is selected, and analysis of this impact will be included in the EA.



As we discussed in our meeting with Ms. Pallante, if a Finding of No Significant Impact (FONSI) results from the Environmental Assessment (EA), we plan to select a corridor from the alternatives based on the analyses provided in the EA. Subsequent to the selection of a corridor, DOE and NREL would evaluate specific routes within the selected corridor. At that time we anticipate further consultations with your office and other parties regarding the Area of Potential Effects (APE) and the potential for adverse effects on historic properties under Section 106 of the National Historic Preservation Act (Section 106) before finalizing a route. At this stage of decision-making, the EA will consider the areas shaded on Figures A-1 and A-2 for each corridor our APE.

If your records indicate that there may be additional resources within these corridors that are not shown on the figures or included in the Appendices, please include the identification of any such resources in your response to this letter. Additionally, if you have specific concerns at this time over the use of any of the alternative corridors please advise, so that we may take your input into consideration in our analyses in the EA.

DOE appreciates your participation in this process and will work closely with you and your staff as we comply with Section 106 of the National Historic Preservation Act and with the Advisory Council on Historic Preservation regulations.

We look forward to further consultations on this project.  
Please contact me at (303) 275-4723 for additional information.

Sincerely,



 Steve Blazek  
NEPA Compliance Officer

Enclosure:

Appendix A - Resources Summary for the Camp George West Historic District

Appendix B - Inventory of Cultural Resources

## APPENDIX A RESOURCES SUMMARY FOR THE CAMP GEORGE WEST HISTORIC DISTRICT

Camp George West is a Colorado Army National Guard installation located in central Jefferson County, Colorado, approximately 3 miles east of the City of Golden and 10 miles west of downtown Denver. The facility is situated in an unincorporated area known as Pleasant View, with the City of Golden to the west and the City of Lakewood to the east.

Camp George West Historic District was listed on the National Register of Historic Places (NRHP) in 1993 (NRHP 2008). This appendix discusses the district's location and setting, background, and historic significance, then describes the resources within the district boundaries that could be affected if a South Entrance were built.<sup>1</sup>

### Location and Setting

The geographic setting and location of the Camp George West site has strongly influenced its development and architecture. The site is located at the edge of the foothills of the Rocky Mountains and encompasses part of South Table Mountain. Lena Gulch and unnamed tributaries flow from west to east through the camp, and dry washes extend down the sides of South Table Mountain and join Lena Gulch. The steep sides of South Table Mountain provided a natural backdrop for target practice, and the top of the mountain was quarried for stone used in street surfacing, construction of many Camp George West buildings, and other projects. The relatively flat part of the camp lying south of the plateau was used for training and as a parade ground, while the southernmost portion along both sides of South Golden Road was the setting for most of the facility's buildings.

The Pleasant View area, which lies mainly to the west and south of Camp George West, is an older residential area. More recent suburban residential and office development lies to the north and east. A profusion of intersecting roadways pass near or through the installation. Interstate 70 passes close to the southwest corner of the camp on a southwest-northeast axis. West Colfax Avenue (U.S. 40) and West 6<sup>th</sup> Avenue (U.S. 6) follow alignments south of the facility. South Golden Road cuts through the southern section of the camp on an east-west route.

### *Glossary of NRHP terms used in this appendix*

**Site:** the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archeological value regardless of the value of any existing structure

**District:** a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development

**Building:** a resource created principally to shelter any form of human activity, such as a house

**Structure:** a functional construction made for purposes other than creating shelter, such as a bridge

**Object:** a construction primarily artistic in nature or relatively small in scale and simply constructed, such as a statue or milepost

Source: National Park Service:  
[http://www.nps.gov/history/nr/publications/bulletins/nrb16a/nrb16a\\_appendix\\_IV.htm](http://www.nps.gov/history/nr/publications/bulletins/nrb16a/nrb16a_appendix_IV.htm)

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<sup>1</sup> The information in this appendix was obtained from two NRHP forms: (1) the Multiple Property Documentation Form, and (2) the Registration Form, prepared by Front Range Research Associates, Inc. (1992a, 1992b).

***Contributing vs. Noncontributing Resources***

Some historic districts, including Camp George West, contain a mix of contributing and noncontributing resources. A contributing resource is a site, building, structure, or object that adds to the historical associations, historic architectural qualities, or archeological values for which a property is significant. A contributing resource has the following characteristics:

- It was present during the period of time that the property achieved its significance;
- It relates to the documented significance of the property;
- It possesses historical integrity or is capable of yielding important information relevant to the significance of the property.

Any resource within a district that lacks such associations, qualities, or values is called a noncontributing resource.

Source: <http://www.nps.gov/history/nr/publications/bulletins/arch/pt5.htm>

**Background**

The district is an architecturally cohesive collection of buildings and structures associated with a Colorado Army National Guard installation. Camp George West, established in 1903, was the Colorado National Guard's only permanent training facility and was an integral part of the National Guard's activities in Colorado, serving as the principal storage and supply center and the site of summer encampments. The district encompasses historic resources along both sides of South Golden Road, including the highest concentration of historic resources associated with the post. Included are the major historic administrative, residential, storage, utility, and training facilities of the camp, constructed during the period 1903 to 1945.

The resources reflect a variety of masonry techniques utilizing stone obtained on post lands and quarried from the camp quarry. One of the largest collections of Works Progress Administration (WPA)-sponsored buildings in Colorado is located on the grounds of Camp George West, reflecting the installation's significant role in providing employment during the 1930s.

The district incorporates 82 resources, including 64 (78 percent) contributing historic resources and 18 (22 percent) noncontributing resources. Of the 64 contributing historic resources, 51 are buildings, 11 are structures, and 2 are objects. The initial parcel of land acquired for the post in 1903 was cut on its southern end by South Golden Road and the track of the Denver and Inter-Mountain Railroad. This division was to influence the subsequent development of the installation. While the size of the post increased and contracted over the years, most of the buildings constructed at Camp George West were located in the southern section close to transportation facilities.

During the 1927-1941 period, a long east-west row of mess halls was built just north of South Golden Road. Two more mess halls were built farther to the north. Concrete tent pads were built in rows in an encampment area behind the mess halls and provided bases on which tents were pitched during summer encampments. Bathhouses/latrines were located on the east and west sides of the camp, and four magazine structures were in the northeast area. An administrative quadrangle also was built north of South Golden Road. The headquarters building and guardhouse are located here.

The area north of Lena Gulch contained a number of uses. The extreme western portion was developed as a rifle firing range in the mid-1920s. Four concrete firing lines are located here. The central area was used as a training area and parade ground for summer encampments and as a grass landing field for small



aircraft. A plane hangar and quonset hut installed during 1949 were later removed and the landing field abandoned in the late 1950s. The eastern portion of this area was developed as a recreation area during the 1930s, containing a recreation hall, outdoor swimming pool (no longer in existence), and tennis courts (no longer in existence).

The buildings and structures of the Camp George West Historic District have been categorized according to the following NRHP categories:

- administrative and general support buildings
- equipment and supply storage facilities
- residences, cantonment structures, and troop support buildings
- recreational facilities
- firing range
- water storage and distribution structures
- transportation-related facilities
- fence and gate structures

### **Historic Significance**

The Camp George West Historic District is a concentrated and architecturally cohesive group of historic resources representing the historic growth and development of the Colorado National Guard's only permanent historic storage and training installation. The district is historically significant for the following reasons:

- In the field of military history, the district is associated with the historic activities of the Colorado National Guard and with the 757<sup>th</sup> Military Police Battalion of the World War II era.
- In the field of social history, the district is associated with numerous 1930s New Deal era public works relief projects.
- The district's architecture represents a large group of native stone and frame buildings designed to reflect an overall architectural theme and to perform a variety of functions required for National Guard activities. The architecture of the installation reflects the expanding role of the Colorado National Guard, the influence of popular architectural styles, evolution of military technology, and changes in construction methods and building materials.

Within the district, 68 of the 82 resources are associated with the development of the post prior to 1945. Only 14 of the properties within the district are of post-1945 construction. The period of significance extends from the creation of the post in 1903 to 1945, coinciding with the end of activities associated with World War II and the construction of temporary buildings during that era. Sixty-four (78 percent) of the resources within the district are more than 50 years old. Within the district is the oldest building still in existence on the post, the officers' clubhouse/caretaker's residence, reflecting the earliest period of development of the site. In addition, the district includes the majority of buildings erected during later historic periods of development in the 1920s and 1930s, with a few examples from the World War II era.

A substantial number of the buildings and structures erected during the 1930s as a result of New Deal public works relief programs are included in the district and form one of the largest collections of WPA-sponsored building in the state. Programs such as the WPA provided funding for construction of buildings and structures at the post during the Depression era. A camp for transient workers was established at the camp during the mid-1930s; over half of the historic resources at the post were built during this period. The various projects employed hundreds of men and helped relieve area unemployment in Colorado. The

buildings within the district are also associated with National Guard activities such as strike and natural disaster assistance, mobilization for Mexican border service and for war, and military training. In addition, the post was a training site during World War II for military police.

A significant number of buildings within the district are constructed of native fieldstone and stone obtained from the post's quarry on South Table Mountain, which give the post a unique architectural identity. The early stone buildings constructed at Camp George West embody style elements such as gabled roofs, battered piers, and multi-pane windows and were built of unquarried stone found on the post. The Depression-era buildings and structures reflect design elements such as multiple narrow windows, complex roofs, and a variety of wall projections that were included to increase the amount of labor necessary for their construction. Residences built during the 1930s feature multiple gables and multi-pane windows. The Depression-era buildings were largely composed of stone quarried on the installation. The small group of World War II temporary buildings erected at Camp George West represent standard plans and the conservation of labor and materials.

The majority of buildings within the district possess the physical characteristics required to be evaluated as contributing elements. In general, the storage buildings and the mess halls have undergone more alterations than other resources due to their adaptation to new uses. However, the original scale, construction techniques, workmanship, location, setting, and much of the original materials are still apparent in these resources. The most common alterations within the district are the remodeling of doors and windows, and less frequently, the addition of nonhistoric siding. A few buildings have been enlarged with enclosed entrance bays or small wings, but none of the additions is large or intrusive enough to diminish the integrity of the buildings. In general, the buildings within the district maintain a high integrity of design, scale, location, craftsmanship, setting, and materials, and as a group convey the historic associations which resulted in their creation.

#### **Physical Characteristics of Historic Resources at Camp George West**

The physical characteristics of the buildings erected at Camp George West were determined by the themes set by the early architecture of the post and the materials and manpower available at the time the buildings were erected. The first permanent building erected on the post was an officers' clubhouse/caretaker's residence, designed by architect Albert Bryan. Built in 1911-1912 south of South Golden Road, the officers' clubhouse/caretaker's residence utilized native stone construction with design elements such as a gabled roof, overhanging eaves with exposed rafters, and multi-pane windows. These elements influenced subsequent buildings and resulted in the creation of a unique architectural environment. Buildings erected during the 1910s and 1920s repeated elements of Bryan's work.

During the 1930s, a quarry that operated under the auspices of various public works programs supplied materials, and public relief agencies supplied manpower for buildings. George H. Merchant, architect for the buildings constructed during this period, used native stone for the post's buildings. The buildings of this era were designed with numerous narrow windows, wall buttresses, and complex rooflines in order to utilize as much labor as possible, thereby giving work to unemployed men. The built environment of the post grew substantially during the 1930s as a result of these public works projects.

During World War II, a small number of temporary buildings were erected following standard plans provided by the Quartermaster Corps. To conserve materials and time, these temporary buildings were simple frame structures similar to thousands of others built on military installations across the country.

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Appendix A

Resources Summary for the Camp George West Historic District

**Descriptions of the Potentially Affected Resources**

Table A-1 lists the potentially affected resources at Camp George West, their year of construction, their historic status (contributing or noncontributing), and the nearest corridor(s) along which each resource lies. Of the 15 potentially affected buildings and structures, 13 are contributing resources and 2 are noncontributing resources. All of the potentially affected resources lie north of South Golden Road.

**Table A-1. Camp George West Resources Potentially Affected under the Proposed Action**

Resource	Resource Number	Year of Construction	Historic Status	Nearest Proposed Corridor(s)
Administrative and General Support Buildings				
Headquarters	45	1937	Contributing	D
Guardhouse	83	1940	Contributing	D
Equipment and Supply Storage Facilities				
Small Arms/ Ammunition Storage	33	1925	Contributing	D
Motor Vehicle Storage	111	1953	Noncontributing	B, D
Residences, Cantonment Structures, and Troop Support Buildings				
Mess Hall	12	1936	Contributing	D
Mess Hall	28	1941	Contributing	D
Mess Hall	29	1941	Contributing	D
Recreational Facilities				
Recreation Hall	48	1937	Contributing	D
Outdoor Swimming Pool <sup>a</sup>	49	1936	Contributing	D
Firing Range				
Rifle Firing Range	FR12	1924	Contributing	B, C
Water Storage and Distribution Structures				
Pump House <sup>a</sup>	84	1927	Contributing	B
Transportation-Related Facilities				
Pedestrian Underpass	50	1934	Contributing	D
Bridge	92	1940	Contributing	B
Bridge	113	1938	Contributing	D
Other Buildings/Structures				
Golden Gun Club	104	1941	Noncontributing	B
Clubhouse (lost to fire July 2009)				

a. The Outdoor Swimming Pool and the Pump House are no longer in existence.

The following sections describe the buildings and structures that could be affected if one of the five proposed corridors were built. The locations of these resources are shown on Figures A-1 and A-2.

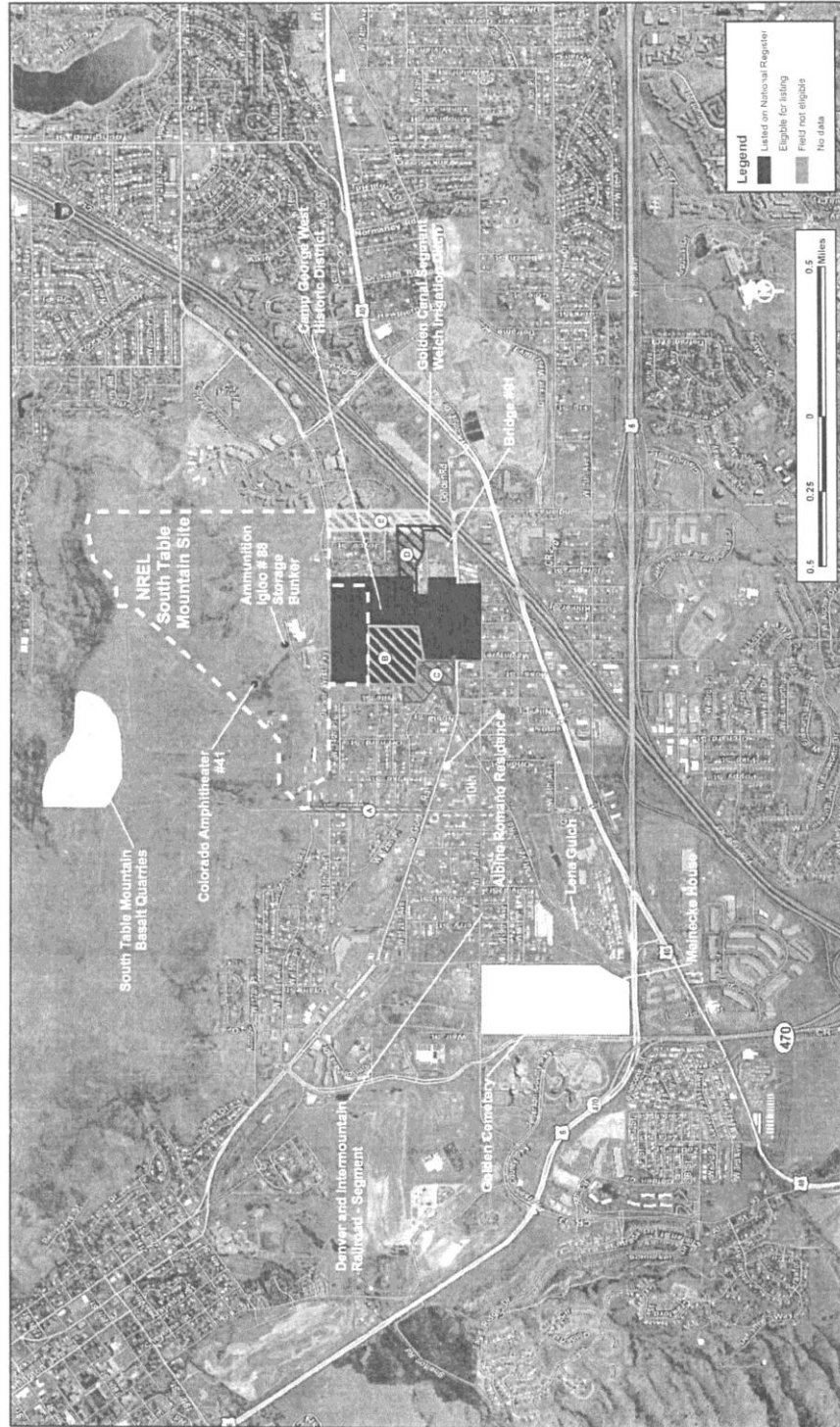


Figure A-1. Historic Resources within the Proposed Corridors for a Second Full Service Access Road to the NREL's South Table Mountain Site



Figure A-2. Camp George West Historic Resources within the Proposed Corridors for a Second Full Service Access Road to the NREL's South Table Mountain Site



### Administrative and General Support Buildings

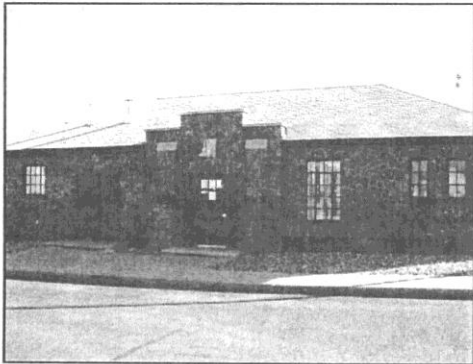
#### *Building 45—Headquarters (1937)*

A focal point of the post is the headquarters building erected in 1937 with funding from the WPA. The building was designed by George H. Merchant to employ as many hours of labor as possible in its construction, thereby providing employment for public relief workers. Included in the design were a complex roofline, many windows, and several wall projections. The one-story split fieldstone building has a central bay with a steeply pitched roof intersected on each end by roof wings. The central bay has a low, shed-roofed projecting façade presenting the building's central entrance. Above the entrance is a pediment arch that is stuccoed and decorated with the state seal. The entrance is flanked by a pair of casement windows with concrete sills. Flanking these are large 16-pane windows.



*Headquarters (Building 45)*

At the corners of the main bay are engaged stone pilasters. In 1956, a frame addition was added to the eastern wing of the building. The main entrance has been remodeled, as have entrances on the east and west wings.



*Guardhouse (Building 83)*

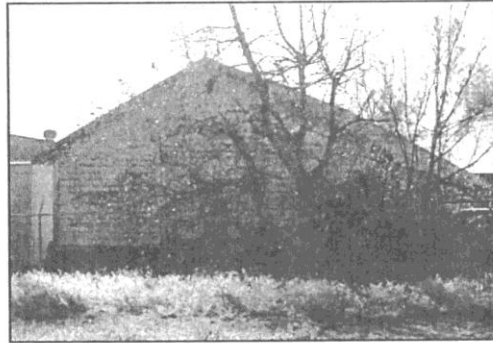
#### *Building 83—Guardhouse (1940)*

The guardhouse was one of the WPA-funded projects which erected major administrative and support buildings around the central quadrangle of the post. George H. Merchant designed the building to employ a maximum amount of labor through the inclusion of numerous windows and wall projections. The one-story, randomly coursed, split stone building has a pitched roof. A central, slightly projecting entrance features a stepped parapet with cast cement coping. Flanking the entrance are engaged stone pilasters with cast cement trim. Stonework above the entrance opening forms a slight arch. Windows are multi-pane casements with cast sills. The building has a raised concrete foundation, which has been painted. The original main entrance has been enclosed and has a window. The east elevation has an enclosed entrance bay with nonhistoric siding.

### Equipment and Supply Storage Facilities

#### *Building 33—Small Arms/Ammunition Storage (1925)*

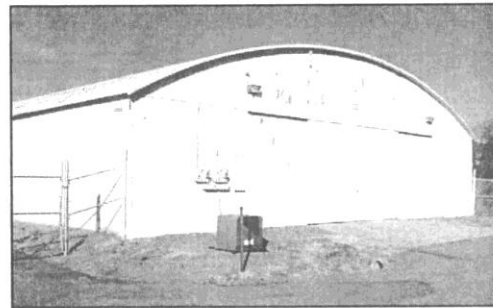
This one-story rectangular frame building has tongue-and-groove siding and a gabled roof with overhanging eaves and exposed rafters. The northern elevation has a central sliding wooden door that opens onto a small loading dock and is flanked by small multi-pane windows. A second sliding door is on the west. Windows are mostly six-pane with wood trim. One window on the east elevation has been replaced with a metal vent.



*Small Arms/Ammunition Storage (Building 33)*

#### *Building 111—Motor Vehicle Storage (1953)*

Built in 1953, after the period of significance (1903 to 1945), Building 111 was constructed north and west of the Headquarters and Guardhouse. This quonset-hut-style building has been designated a noncontributing resource, meaning it lacks any associations, qualities, or values that would contribute to the significance of the Camp George West Historic District.



*Motor Vehicle Storage (Building 111)*

### Residences, Cantonment Structures, and Troop Support Buildings

#### *Building 12—Mess Hall (1936)*

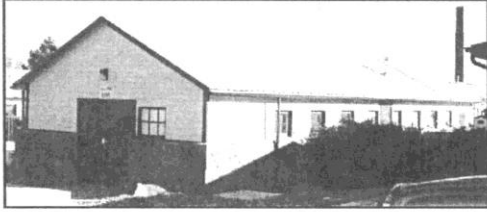
This building is one of 11 remaining of 17 mess halls built during the period 1936-1941 on the post. It is representative of the current appearance of the buildings. This mess hall is a one-story front gable building with overhanging eaves. The lower portion of the building to sill height is composed of quarried basaltic stone rubblework; the upper walls are frame, now covered with nonhistoric siding over the original horizontal tongue-and-groove siding. The building has central entrances on gable end walls. The south entrance originally had double doors but now has a single door. Side elevations had central doors that are now covered up. Original six-pane windows have been replaced with sliding windows. Original corrugated iron roofing has been replaced with shingle roofing.



*Mess Hall (Building 12)*

#### *Buildings 28 and 29—Mess Halls (1941)*

The basic design of these mess halls, built approximately 5 years after Building 12, was essentially the same as the design for Building 12. However, the stone masonry on the lower portion of these buildings is more polygonal, with the stones quarried to a flatter surface.



*Mess Hall (Building 28)*



*Mess Hall (Building 29)*

### **Recreational Facilities**

#### *Building 48—Recreation Hall (1937)*

This one-story building was designed to accommodate leisure-time activities of Guardsmen as a WPA public works relief project. The walls of the building are composed of fieldstone set with wide mortar seams. The cross-gabled roof has widely overhanging eaves, decorative beams, and exposed rafters. A projecting, gabled, central entrance bay is flanked by wraparound porches with stone pillar supports and walls. Over the entrance is a flat stone lintel. All windows have multiple panes (six or eight) and cast cement sills. The interior features a large fieldstone fireplace. The building has nonhistoric doors, the windows have metal grills, and a portion of the porch has been enclosed.



*Recreation Hall (Building 48)*

#### *Structure 49—Outdoor Swimming Pool (1936)*

The concrete outdoor swimming pool is no longer in existence; in its place is a wetland. The pool, built as a public works relief project, was a 50- by 90-foot rectangle that varied in depth from 3 feet on the western shallow end to 8 feet on the eastern end. The edge of the pool was surrounded by a narrow wall approximately 18 inches high, which was topped by a flat concrete top. An L-shaped concrete bench was located northwest of the pool. The pool originally had a diving board in the center of the east end and metal access ladders adjacent to the diving board and at the northeast and southeast corners. The pool was enclosed by a chain link fence.



*Wetland occupying the original location of the outdoor swimming pool (Structure 49)*

## **Firing Range**

### *Structure FR12—Rifle Firing Range (1924)*

Located northwest of the principal concentration of buildings at Camp George West, on the western edge of the installation, the lines of the firing range are oriented east-west and consist of a 600-yard line (farthest to the south), a 500-yard line, a 300-yard line, and a 200-yard line (farthest to the north). The lines are constructed of concrete, approximately 340 feet long and 1 foot wide, flush with the ground on the side of the shooter and about a foot above the ground on the side of the target. The 600-yard line is intact; the remaining three are missing segments where a dirt road and/or channelized drainage cuts through the lines. The rifle range was utilized during summer encampments of the Colorado National Guard during the 1920s and 1930s. During World War II, the 757th Military Police Battalion used the range.



*Rifle Firing Range (FR12)*

## **Water Storage and Distribution Structures**

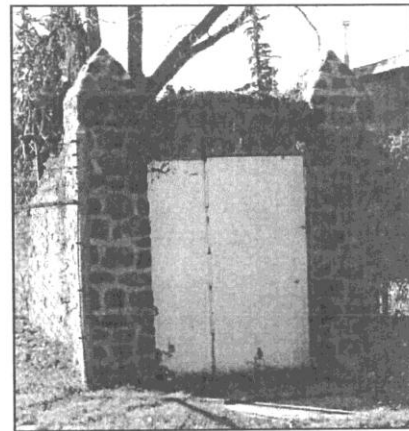
### *Structure 84—Pump House (1927)*

The pump house is no longer in existence. The pump house was a small, wedge-shaped, one-story frame structure with drop siding and a shed roof that extended to the ground. It had a stone foundation and a central door constructed of vertical boards. By the 1980s, the structure was in an advanced state of deterioration (Front Range Research Associates, 1992b).

## **Transportation-Related Facilities**

### *Structure 50—Pedestrian Underpass (1934)*

A Civil Works Administration project completed this pedestrian tunnel under South Golden Road and the Denver and Inter-Mountain railroad tracks to connect the northern and southern portions of the camp. The concrete-lined passageway consists of steps and a tunnel with sloping floors toward a level midsection. Entrances on either end are wedge-shaped and composed of split fieldstone. Stone posts with pyramidal tops stand at the corners of the entry and extend beyond the roofline. The roof is slightly curved and covered with a thin layer of concrete. The entrance on the southern end is open, while the one on the north is covered with a metal door and siding.



*Pedestrian Underpass (Structure 50)*



*Bridge (Structure 92)*

*Structure 92—Bridge (1940)*

This bridge over Lena Gulch was built as part of the WPA project to improve the post and provided easier access to the northwest quadrant of the camp and firing range. The one-lane bridge has a reinforced flat concrete deck and a 10-foot roadway with a 3-foot sidewalk on the east. The span of the bridge is 14 feet. The bridge abutments are composed of roughly split basaltic stone laid in courses. The side walls of the bridge are flared, rounded, and tapered and have a top layer of concrete.



*Bridge (Structure 113)*

*Structure 113—Bridge (1938)*

This two-lane bridge in the north-central section of Camp George West was constructed in 1938 as a WPA project. The bridge separately spans Lena Gulch and an unnamed tributary to that stream. It has a reinforced concrete slab deck and split fieldstone abutments with thick mortar. The roadway is 20 feet wide with stone walls higher toward the center of the bridge, where the land drops off beneath. A layer of projecting fieldstones is cemented to the top of the bridge walls, and metal railings flank the bridge deck. The total length of the bridge and its approaches is approximately 140 feet.



*Golden Gun Club Clubhouse (Building 104)*



*Golden Gun Club Clubhouse - lost to fire (July 2009)*

#### **Other Buildings/Structures**

*Building 104—Golden Gun Club Clubhouse (1941)*

This small one-story gabled building is composed of hand-made concrete blocks with decorative rocks embedded in them in decorative patterns. The building was not built by the military, and the National



Guard did not take possession of the building until 1948; therefore, it does not meet the requirements for a contributing resource within the district. This building was destroyed by fire the weekend of July 25-26, 2009

#### References

NRHP (National Register of Historic Place), 2008. COLORADO – Jefferson County – Historic Districts, online at <http://www.historicdistricts.com/co/Jefferson/districts.html>.

Front Range Research Associates, 1992a. National Register of Historic Places, Multiple Property Documentation Form, September 1, 1992, online at <http://www.nr.nps.gov/multiples/64500062.pdf>.

Front Range Research Associates, 1992b. National Register of Historic Places, Registration Form, September 1, 1992.

**APPENDIX B**  
**RESULTS OF THE OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION**  
**SEARCH OF THE COLORADO INVENTORY OF CULTURAL RESOURCES FOR AN**  
**AREA IN THE FOLLOWING SECTIONS:**

PM	TOWNSHIP	RANGE	SECTION
6th	4S	70W	1, 2
6th	3S	70W	36

*Development of a new access road to the STM site may have the potential for  
direct or indirect impacts in these sections.*

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Appendix B

Results of the Office of Archaeology and Historic Preservation Search

**Table B-1. Results of the Office of Archaeology and Historic Preservation Search of the Colorado Inventory of Cultural Resources within the Camp George West Historic District**

Resource ID	Resource Name	Resource Type	Resource Address	Eligibility Status
5JF.1032	Meinecke House	Historic	605 Ulysses St., Golden	Field not eligible
5JF.1033.1	Lena Gulch	Historic Historical Archaeology	Mt. Vernon Rd. N & S of U.S. 6, Golden	Field not eligible
5JF.145	Camp George West Historic District	Historic District	15000 S. Golden Rd., Golden Vicinity	Listed on National Register 106 - Officially eligible Field not eligible
5JF.145.1	Mess Hall Building Number 11	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.10	Mess Hall Building Number 20	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.11	Mess Hall Building Number 21	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.12	Mess Hall Building Number 22	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.13	Mess Hall Building Number 23	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.14	Mess Hall Building Number 24	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.15	Mess Hall Building Number 25	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.16	Mess Hall Building Number 26	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.17	Mess Hall Building Number 28	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.18	Mess Hall Building Number 29	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district

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<b>Resource ID</b>	<b>Resource Name</b>	<b>Resource Type</b>	<b>Resource Address</b>	<b>Eligibility Status</b>
5JF.145.19	Quartermaster Supply Building Building Number 30	Historic	15000 S. Golden Rd., Golden	Contributes to NR district Field not eligible
5JF.145.2	Mess Hall Building Number 12	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.20	Small Arms Ammunition Storage Building Number 33	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.21	Magazine Building Number 34	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.22	Storage Fire Station Building Number 35	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.23	Officers Mess Hall Building Number 43	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.24	Headquarters Building Number 45	Historic	15000 S. Golden Rd., Golden	Field eligible Contributes to NR district
5JF.145.25	Latrine Building Number 46	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.26	Infirmary Building Number 47	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.27	Recreation Hall Building Number 48	Historic	15000 S. Golden Rd., Golden	Field eligible Contributes to NR district
5JF.145.28	Swimming Pool-Outdoor Structure Number 49	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.29	Pedestrian Underpass Structure Number 50	Historical Archaeology Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.3	Mess Hall Building Number 13	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district

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<b>Resource ID</b>	<b>Resource Name</b>	<b>Resource Type</b>	<b>Resource Address</b>	<b>Eligibility Status</b>
5JF.145.30	Filling Station Building Number 51	Historic	15000 S. Golden Rd., Golden	Field eligible Contributes to NR district
5JF.145.31	Warehouse Building Number 52	Historic	15000 S. Golden Rd., Golden	Field eligible Contributes to NR district
5JF.145.32	Laundry Building Building Number 53	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.33	Latrine Building Number 54	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.34	Warehouse Building Number 55	Historic	15000 S. Golden Rd., Golden	Field eligible Contributes to NR district
5JF.145.35	Wagon Shed Building Number 58	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.36	Wagon Shed Building Number 59	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.37	Wagon Shed Building Number 60	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.38	Wagon Shed Building Number 61	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.39	Wagon Shed Building Number 62	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.4	Mess Hall Building Number 14	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.40	Water Tower-South Building Number 63	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.41	Gas And Oil Station Building Number 66	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.42	Officers' Clubhouse Building Number 67	Historic	15000 Golden Rd., Golden	Field eligible Contributes to NR district
5JF.145.43	Quarters Building Number 68	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district



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Appendix B

Results of the Office of Archaeology and Historic Preservation Search

**Table B-1. Results of the Office of Archaeology and Historic Preservation Search of the Colorado Inventory of Cultural Resources within the Camp George West Historic District**

<b>Resource ID</b>	<b>Resource Name</b>	<b>Resource Type</b>	<b>Resource Address</b>	<b>Eligibility Status</b>
5JF.145.44	Quarters Building Number 69	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.45	Quarters Building Number 70	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.46	Quarters Building Number 71	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.47	Garage Building Number 73	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.48	Garage Building Number 74	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.49	Garage Building Number 76	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.5	Mess Hall Building Number 15	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.50	Garage Building Number 77	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.51	Garage Building Number 81	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.52	Motor Vehicle Storage Building Number 82	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.53	Guard House Building Number 83	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.54	Pump House Building Number 84	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.55	Underground Reservoir Structure Number 90	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.56	Bridge Structure Number 92	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district

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Appendix B

Results of the Office of Archaeology and Historic Preservation Search

**Table B-1. Results of the Office of Archaeology and Historic Preservation Search of the Colorado Inventory of Cultural Resources within the Camp George West Historic District**

<b>Resource ID</b>	<b>Resource Name</b>	<b>Resource Type</b>	<b>Resource Address</b>	<b>Eligibility Status</b>
5JF.145.57	Orderly Room Building Number 96	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.58	Orderly Room Building Number 97	Historic	15000 S. Golden Rd., Golden	Field not eligible Noncontributing to NR district
5JF.145.59	Theater/Chapel Building Number 100	Historic	15000 S. Golden Rd., Golden	Field not eligible Noncontributing to NR district
5JF.145.6	Mess Hall Building Number 16	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.60	Gate House Building Number 102	Historic	15000 S. Golden Rd., Golden	Field not eligible Noncontributing to NR district
5JF.145.61	Golden Gun Club Clubhouse Building Number 104	Historic	15000 S. Golden Rd., Golden	Field not eligible Noncontributing to NR district
5JF.145.62	Bridge Structure Number 113	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.63	Inter-Mountain Railroad Station Building Number 116	Historic	15000 S. Golden Rd., Golden	Field eligible Contributes to NR district
5JF.145.64	Gates Stone Gates	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.65	Gate And Wall Stone Gate And Wall	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.66	Firing Lines Firing Pits Firing Range	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.67	Tent Pads Tent Encampment	Historical Archaeology	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.68	Tent Pads Tent Encampment	Historical Archaeology		Field not eligible Contributes to NR district

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Appendix B

Results of the Office of Archaeology and Historic Preservation Search

**Table B-1. Results of the Office of Archaeology and Historic Preservation Search of the Colorado Inventory of Cultural Resources within the Camp George West Historic District**

Resource ID	Resource Name	Resource Type	Resource Address	Eligibility Status
5JF.145.69	Tent Pads Tent Encampment	Historical Archaeology		Field not eligible Contributes to NR district
5JF.145.70	Tent City North (Camp George West)	Historical Archaeology		Field needs data
5JF.145.71		Historical Archaeology		No assessment given on form
5JF.145.7	Mess Hall Building Number 17	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.8	Mess Hall Building Number 18	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.145.9	Mess Hall Building Number 19	Historic	15000 S. Golden Rd., Golden	Field not eligible Contributes to NR district
5JF.165		Archaeological		Field not eligible
5JF.166		Archaeological		Field not eligible
5JF.167		Archaeological		Field not eligible
5JF.2410		Historical Archaeology		Field not eligible
5JF.2784	Albino Romano Residence	Historic	16300 S Golden Rd., Golden	Field eligible
5JF.2840		Historic	600 Kilmer St., Golden	Officially not eligible Field not eligible
5JF.2841		Historic	609 Lupine St., Golden	Officially not eligible Field not eligible
5JF.2842		Historic	615 Kendrick St., Golden	Officially not eligible Field not eligible
5JF.2843		Historic	620 Kendrick St., Golden	Officially not eligible Field not eligible
5JF.2844		Historic	625 Juniper St., Golden	Officially not eligible Field not eligible

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National Renewable Energy Laboratory South Table Mountain Site

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Appendix B

Results of the Office of Archaeology and Historic Preservation Search

**Table B-1. Results of the Office of Archaeology and Historic Preservation Search of the Colorado Inventory of Cultural Resources within the Camp George West Historic District**

Resource ID	Resource Name	Resource Type	Resource Address	Eligibility Status
5JF.2845		Historic	612 Juniper St., Golden	Officially not eligible
5JF.2846		Historic	635 Joyce St., Golden	106 - Officially eligible Field eligible
5JF.2847		Historic	640 Joyce St., Golden	Officially not eligible Field not eligible
5JF.2848		Historic	645 Isabell St., Golden	Officially not eligible Field not eligible
5JF.401	Golden Cemetery	Historic Historical Archaeology	Golden	106 - Officially eligible Field eligible
5JF.817.6	Denver And Intermountain Railroad - Segment	Historical Archaeology Historic		Officially not eligible Noncontributing to NR district Field not eligible
5JF.839	South Table Mountain Basalt Quarries	Historical Archaeology		Field needs data
5JF.842	Colorado Amphitheater Structure #41	Historic	15001 Denver West Pkwy., Golden	Listed on National Register Multiple Resource Component Within NR district Contrib. to Officially elig. dist.
5JF.843	Ammunition Igloo Building 88 Storage Bunker	Historic	15001 Denver West Pkwy., Golden	Listed on National Register Within NR district Multiple Resource Component Field eligible
5JF.846	Bridge Structure Number 91	Historical Archaeology Historic	15000 S. Golden Rd., Golden	Field not eligible

**Table B-1. Results of the Office of Archaeology and Historic Preservation Search of the Colorado Inventory of Cultural Resources within the Camp George West Historic District**

Resource ID	Resource Name	Resource Type	Resource Address	Eligibility Status
5JF.848.1	Golden Canal Segment Welch Irrigation Ditch	Historical Archaeology Historic	15000 S. Golden Rd., Golden	Officially not eligible Noncontrib. to Officially elig. Dist Field not eligible Field eligible





## Department of Energy

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401 3393

August 17, 2009

Mr. Terry McKee  
U.S. Army Corps of Engineers  
Denver Regulatory Office  
9307 South Wadsworth Blvd.  
Littleton, CO 80128-6901

Dear Mr. McKee,

SUBJECT: Lena Gulch wetland delineation review request relevant to the National Renewable Energy Laboratory Supplemental Environmental Assessment for the South Table Mountain Facility

With this letter, the Department of Energy (DOE) requests that the U.S. Army Corps of Engineers (USACE) review the wetland delineation shown on the attached figure in the vicinity of Lena Gulch and determine that it is accurate and acceptable to your office.

The delineated wetlands fall within possible areas of impact associated with potential alignments of proposed access to DOE's National Renewable Energy Laboratory (NREL) South Table Mountain (STM) facility. The capacity of Denver West Parkway is a limiting factor to site development. Consequently, second full-service site access is being investigated and an Environmental Assessment (EA) is underway per the requirements of the National Environmental Policy Act (NEPA). As the various alignments being considered in the EA have the potential to impact wetlands and waters of the U.S., approval of the delineated extent of wetlands and waters of the U.S. under the jurisdiction of the USACE is needed.

The potential road alignments being considered in the EA are located in the NE1/4 of Section 1, Township 4S, Range 70W, within Jefferson County. The nearest major intersection is I-70 and Highway U.S. 40. (Please see Figure 1). Driving directions from the USACE offices in Littleton are as follows:

Take C-470 West to I-70E  
Take W. Colfax Ave/US40 Exit 262  
Follow W. Colfax Avenue to turn (at light) for South Golden Road  
Follow South Golden Road (veers to west/left) to Kilmer Street  
Turn north/right on Kilmer Street  
Follow Kilmer into Pleasant View Community Park parking lot

Federal Recycling Program



Printed on Recycled Paper

The delineated wetland boundaries as well as channels and ditches within the area being evaluated for the EA are shown in the attached exhibit. The completed data sheets from Great Plains Region Supplement are also attached. At this time, it is not possible to provide a quantification of the area of impact or of the volume of dredge or fill materials to be placed in wetlands or below the ordinary high mark of waters of the U.S. as a final road alignment has not been determined.

We appreciate your review of the attached wetland delineation and assessment of possible jurisdictional waters and look forward to your response. Please contact Tom Ryon at 303-275-3252 or Genny Braus at 303-275-3251 with NREL Environment, Health and Safety with any questions you might have.

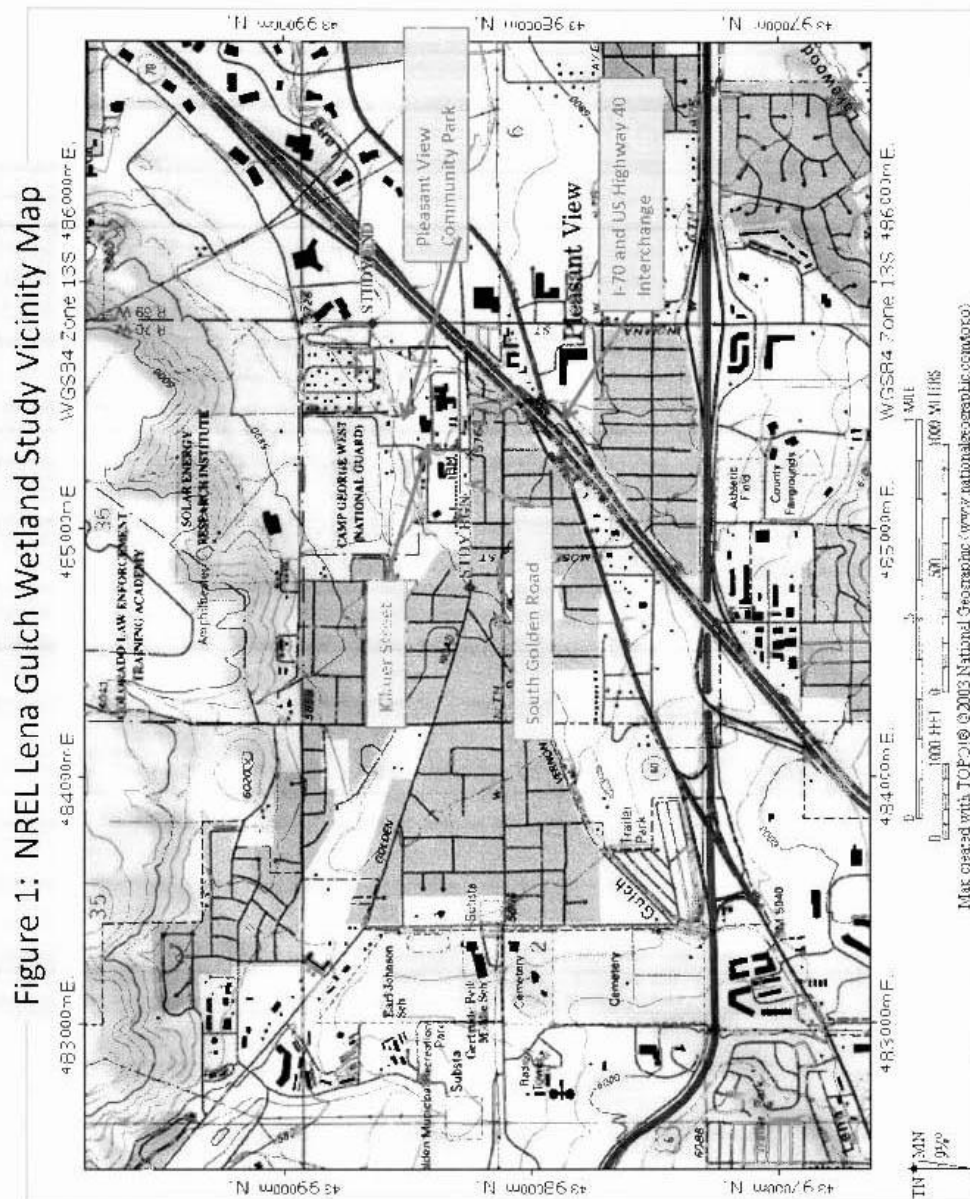
Sincerely,

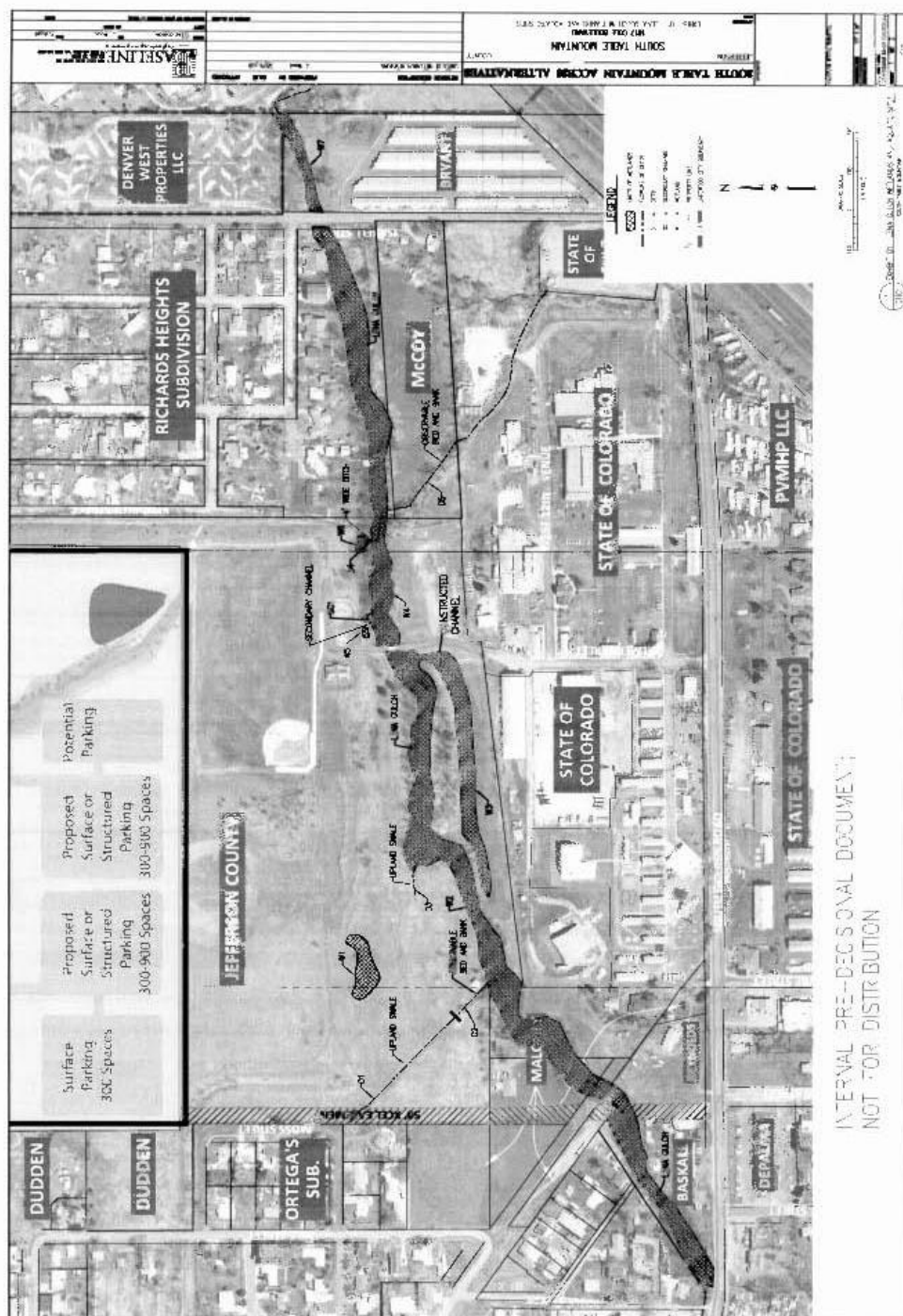


Steve Blazek  
NEPA Compliance Officer

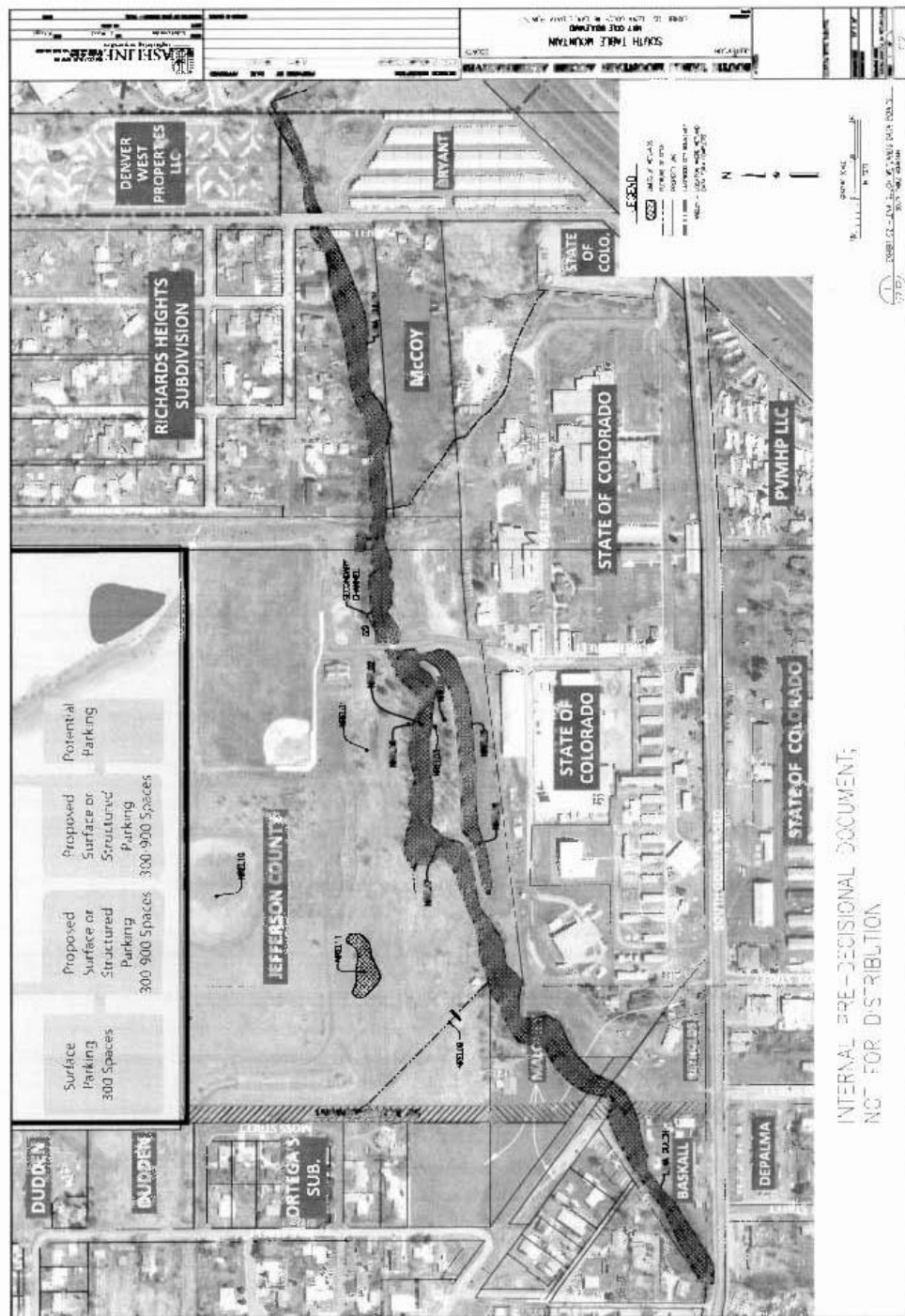
Attachments

cc: Chris Carusona, DOE GO  
John Eickhoff - NREL, EHS  
Genevieve Braus - NREL, EHS  
Tom Ryon - NREL, EHS  
Tom Anderson - PNL  
Christine Ross - PNL  
Daniel Lowery - PNL





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WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Lena Gulch/SEAF STM City/County: Golden, Jefferson Sampling Date: 7/28/09  
 Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-01  
 Investigator(s): Ryan, Brous, Beatty, Wood Section, Township, Range: Sec 01 NE, T04S, R70W  
 Landform (hill slope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%):  
 Subregion (LRR): G (Western Great Plains) Lat: 39.7368°N Long: -105.1725°W Datum: NAD83  
 Soil Map Unit Name: Englemont Urban Land Complex NW Classification:  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)  
 Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Nonnal Circumstances" present? Yes X No       
 Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present?	Yes <u>    </u> No <u>X</u>	Is the Sampled Area within a Wetland? Yes <u>    </u> No <u>X</u>
Hydric Soil Present?	Yes <u>    </u> No <u>X</u>	
Wetland Hydrology Present?	Yes <u>    </u> No <u>X</u>	
Remarks: <u>High Precip Year</u>		

**VEGETATION - Use scientific names of plants.**

Tree Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B) <b>Prevalence Index Worksheet:</b> Total % Cover of: <u>    </u> Multiply by: OBL species: <u>    </u> x 1 = <u>    </u> FACW species: <u>    </u> x 2 = <u>    </u> FAC species: <u>    </u> x 3 = <u>    </u> FACU species: <u>    </u> x 4 = <u>    </u> OPL species: <u>    </u> x 5 = <u>    </u> Column Totals: (A) <u>    </u> (B) <u>    </u> Prevalence Index = B/A = <u>    </u> <b>Hydrophytic Vegetation Indicators:</b> N Dominance Test is >50% - Prevalence index is >3.0 N Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) N Problematic Hydrophytic Vegetation (Explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>    </u> No <u>X</u>
1. <u>Rosa arkansana</u>	<u>5</u>	<u>Y</u>	<u>NF</u>	
2. <u>Pearus virginiana</u>	<u>3</u>	<u>Y</u>	<u>FACU</u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>0</u> = Total Cover				
Shrub Stratum (Plot size: <u>15'</u> )				
1. <u>Atriplex confertifolia</u>	<u>60</u>	<u>Y</u>	<u>NL</u>	
2. <u>Atriplex divaricata</u>	<u>T</u>	<u>N</u>	<u>NL</u>	
3. <u>Atriplex confertifolia</u>	<u>T</u>	<u>N</u>	<u>FACU</u>	
4. <u>Salicornia virginica</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>93</u> = Total Cover				
Herb Stratum (Plot size: <u>5'</u> )				
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
6. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
7. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>3</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>    </u> )				
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum: <u>3</u>				
Remarks:				

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SOIL

Sampling Point: NREL-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type	Loc <sup>1</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-8	10YR 3/1	100					Loam	
8-13	10YR 3/3	100					Loam	
13-20	10YR 3/3	100					Clay loam	

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	<input checked="" type="checkbox"/> 1 cm Muck (A5) (LRR I, J)
<input type="checkbox"/> Histoc Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input type="checkbox"/> Black Histc (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)
<input type="checkbox"/> Stratiher Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Rec Parent Material (TF2)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic
<input type="checkbox"/> 2.5 cm Mucky Depleted Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)	

Restrictive Layer (if present):

Type: NA

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B12)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> (where not filled)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Water-Stained Leaves (B8)	

Secondary Indicators (minimum of two required)

<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Scarcely Vegetated Concave Surface (B8)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where filled)
<input type="checkbox"/> Crayfish Burrows (C6)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes \_\_\_\_\_ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No ☒ Depth (inches): \_\_\_\_\_

Saturation Present? Yes \_\_\_\_\_ No ☒ Depth (inches): \_\_\_\_\_

(includes capillary fringe)

Wetland Hydrology Present? Yes \_\_\_\_\_ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

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National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Long Gulch / SEAF STM City/County: Golden, Jefferson Sampling Date: 7/28/09  
 Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-02  
 Investigator(s): Ryan, Brans, Beatty, Wolf Section, Township, Range: Sec 01NE, T04S, R70W  
 Landform (hill slope, terrace, etc.): terrace Local relief\* (concave, convex, none): concave Slope (%): 3  
 Subregion (LRR): G (Western Great Plains) Lat: 39.7364°N Long: -105.1725°W Datum: NAD83  
 Soil Map Unit Name: Englewood Urban Land Complex NWI classification: \_\_\_\_\_  
 Are climate / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation N Soil N or Hydrology N significantly disturbed? Are 'Normal Circumstances' present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation N Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS** - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	
Remarks: <u>High Precip Year</u> <u>test pit near stream bed</u>		

**VEGETATION** - Use scientific names of plants.

Tree Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)
1. <u>Fraxinus americana</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
2. <u>Glacogon angustifolia</u>	<u>2</u>	<u>N</u>	<u>FAC</u>	
3. <u>Populus deltoides</u>	<u>10</u>	<u>N</u>	<u>FAC-</u>	
4. <u>Salix amygdaloides</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>	
<u>82</u> - Total Cover				Prevalence Index worksheet: Total % Cover of _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = BA = _____ Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is >3.0 <input checked="" type="checkbox"/> Morphological Adaptations! (Provide supporting data in Remarks or on a separate sheet) <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation! (Explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
Sapling/Shrub Stratum (Plot size: <u>15'</u> )				
1. <u>Fraxinus americana</u>	<u>3</u>	<u>Y</u>	<u>FACW</u>	
2. _____				
3. _____				
Herb Stratum (Plot size: <u>5'</u> )				
1. <u>Agropyron repens</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Prevalence Index = BA = _____ Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is >3.0 <input checked="" type="checkbox"/> Morphological Adaptations! (Provide supporting data in Remarks or on a separate sheet) <input checked="" type="checkbox"/> Problematic Hydrophytic Vegetation! (Explain) *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. <u>Poa pratensis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
3. <u>Phalaris grandinacea</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
4. <u>Agrostis alba</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
5. <u>Cirsium arvense</u>	<u>3</u>	<u>N</u>	<u>FACU</u>	
6. <u>Cynoglossum officinale</u>	<u>3</u>	<u>N</u>	<u>NO</u>	
7. <u>Rumex crispus</u>	<u>1</u>	<u>N</u>	<u>FACW</u>	
8. <u>Nepeta cataria</u>	<u>1</u>	<u>N</u>	<u>FACU</u>	
9. <u>Ornithoglossum</u>	<u>40</u>	<u>Y</u>	<u>NL</u>	
10. <u>Dactylis glomerata</u>	<u>10</u>	<u>N</u>	<u>FACU</u>	
<u>91</u> - Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <u>Parnassia quinquefolia</u>	<u>3</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. _____				
% Bare Ground in Herb Stratum <u>10</u> _____ = Total Cover				
Remarks:				

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

SOIL

Sampling Point NREL-02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Texture	Loc <sup>2</sup>	Texture	Remarks
	Color (muns)	%	Color (muns)	%				
0-10	10YR 3/3	100					SLS	
10-22	10YR 3/2	95	2.5S/R 4/8	15	C	m	CS <sub>2</sub> +C	Coarse sand/gravel
22-27	N 2.5/10/100						S.H	Clay L. page 2

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Coast Plains Redox (A16) (LRR F, G, H)
<input checked="" type="checkbox"/> Histic Histic (A3)	<input checked="" type="checkbox"/> Stripped Matrix (S6)	<input checked="" type="checkbox"/> Dark Surface (S7) (LRR G)
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1)	<input checked="" type="checkbox"/> High Plains Depressions (F16)
<input checked="" type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input checked="" type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> Reduced Vertic (F1A)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A'1)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (T72)
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	Indicators of hydrophytic vegetation and
<input checked="" type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input checked="" type="checkbox"/> High Plains Depressions (F16)	wetland hydrology must be present,
<input checked="" type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	unless disturbed or problematic.

Restrictive Layer (if present):

Type: N.A.

Depth (inches):                     

Hydric Soil Present? Yes ☒ No ☐

Remarks: Low chroma soil with mottles with 12" & reduced  
gray muck at bottom (24").

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply):

<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Salt Crust (B11)
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Aquatic Invertebrates (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input checked="" type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Drift Deposits (B3)	(where not filled)
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (minimum of two required):

<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
(where filled)
<input checked="" type="checkbox"/> Grayish Burrows (C8)
<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Geomorphic Position (U2)
<input checked="" type="checkbox"/> FAC-Neutral Test (T5)
<input checked="" type="checkbox"/> Frost Heave Mounds (U7) (LRR F)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):                     

Water Table Present? Yes ☒ No ☐ Depth (inches): 25"

Saturation Present? Yes ☒ No ☐ Depth (inches): 24"

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Near stream bed

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Lena Gulch/SEA # STM City/County: Golden, Jefferson Sampling Date: 7/28/09  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-03  
Investigator(s): Ryan, Braus, Beatty, Wood Section, Township, Range: Sec 01 NE, T 04 S, R 70 W  
Landform (hill/slope, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 1  
Subregion (LRR): G (Western Great Plains) Lat: 39.7363° N Long: -105.1724° W Datum: NAD 83  
Soil Map Unit Name: Englewood-Litchman Land Complex NWI classification: \_\_\_\_\_  
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are 'Normal Circumstances' present? Yes X No \_\_\_\_\_  
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: <u>High Precip Year</u>		

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>20'</u> )	Absolute % Cover	Dominant Species?	Indicator (SWS)
1. <u>Populus deltoides</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>
2. <u>Fraxinus pennsylvanica</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>
3. <u>Elaeagnus angustifolia</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
4. _____	_____	_____	_____
<u>50</u> = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator (SWS)
1. <u>Fraxinus pennsylvanica</u>	<u>3</u>	<u>Y</u>	<u>FACW</u>
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
<u>3</u> = Total Cover			
Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator (SWS)
1. <u>Brassica inermis</u>	<u>80</u>	<u>Y</u>	<u>NL</u>
2. <u>Elymus repens</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
3. <u>Dactylis glomerata</u>	<u>8</u>	<u>N</u>	<u>FACU</u>
4. <u>Xanthoxylum stramonium</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
<u>98</u> = Total Cover			
Woody Vine Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator (SWS)
1. _____	_____	_____	_____
2. _____	_____	_____	_____
<u>0</u> = Total Cover			
% Bare Ground in Herb Stratum <u>2</u>			
Remarks: _____			

Dominance Test worksheet:	
Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-):	<u>3</u> (A)
Total Number of Dominant Species Across All Strata:	<u>4</u> (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>75</u> (A/B)
Prevalence Index worksheet:	
Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals:	(A) _____ (B) _____
Prevalence Index = B/A = _____	
Hydrophytic Vegetation Indicators:	
<u>Y</u> Dominance Test is >50%	
<u>Y</u> Prevalence Index is >3.0	
<u>N</u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)	
<u>N</u> Problematic Hydrophytic Vegetation (Explain)	
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Hydrophytic Vegetation Present? Yes <u>X</u> No _____	

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

SOIL

Sampling Point: NRE1-03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type	Loc <sup>1</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-20	10YR 3/3						Sandy	Second Layer

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>1</sup>Location: P1=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input checked="" type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 2.5 cm Mucky Peel or Peel (S2) (LRR G, H) <input type="checkbox"/> 5 cm Mucky Peel or Peel (S3) (LRR F)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR I, J) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) <input type="checkbox"/> Dark Surface (S7) (LRR G) <input type="checkbox"/> High Plains Depressions (F16) <input type="checkbox"/> (LRR H outside of MLRA 72 & 73) <input type="checkbox"/> Reduced Vetric (F18) <input type="checkbox"/> Red Parent Material (T22) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic
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Restrictive Layer (if present):

Type: NF

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water Stained Leaves (B9)	<input checked="" type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not killed) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)
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Secondary Indicators (minimum of two required)

<input checked="" type="checkbox"/> Surface Soil Cracks (R6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (R10) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where killed) <input type="checkbox"/> Grayish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Frost-Heave Mounds (D7) (LRR F)
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Field Observations:

Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____
Saturation Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____

Wetland Hydrology Present? Yes \_\_\_\_\_ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Lena Gulch/SEA # STM City/County: Golden, Jefferson Sampling Date: 7/28/09  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-C4  
Investigator(s): Ryan, Brous, Beatty, Wood Section, Township, Range: Sec 31NE, T84S, R70W  
Landform (hill slope, terrace, etc.): old flood basin Local relief (concave, convex, none): concave Slope (%): 1  
Subregion (LRR): G (Western Great Plains) at: 39.7363°N Long: -105.1735°W Datum: NAD83  
Soil Map Unit Name: Englewood - Urban Land Complex NWI classification: \_\_\_\_\_  
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks <u>High Precip Year</u>		

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>20'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7</u> (A/B)
1. <u>Fraxinus pennsylvanica</u>	<u>95</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) Prevalence Index = B/A = _____ Hydrophytic Vegetation Indicators: <u>Y</u> Dominance Index is >50% <u>X</u> Prevalence Index is <3.0 <u>N</u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) <u>N</u> Problematic Hydrophytic Vegetation (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No _____
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Shrub Stratum (Plot size: <u>15'</u> ) <u>95</u> = Total Cover				
1. <u>Fraxinus pennsylvanica</u>	<u>3</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
Herb Stratum (Plot size: <u>5'</u> ) <u>3</u> = Total Cover				
1. <u>Artemisia tridentata</u>	<u>3</u>	<u>Y</u>	<u>N</u>	
2. <u>unk herb</u>	<u>1</u>	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: <u>5'</u> ) <u>3</u> = Total Cover				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>94</u> <u>0</u> = Total Cover				
Remarks <u>Bare ground includes leaf litter</u>				

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National Renewable Energy Laboratory South Table Mountain Site

SOIL

Sampling Point NREL-04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type	Log	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-8	10YR 4/3	100					S&L	Sandy Loam
8-20	10YR 3/2	90	10YR 2/1	10	C	M	S&CL	Silty Clay Loam

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils:		
<input checked="" type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR F) <input type="checkbox"/> 1 cm Muck (A6) (LRR F, G, H) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> High Plains Depressions (F15) (MLRA 72 & 73 of LRR H)	<input checked="" type="checkbox"/> 1 cm Muck (A6) (LRR I, J) <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) <input type="checkbox"/> Dark Surface (S7) (LRR G) <input type="checkbox"/> High Plains Depressions (F15) <input type="checkbox"/> (LRR H outside of MLRA 72 & 73) <input type="checkbox"/> Reduced Vertic (F16) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks) Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):  
Type: NA  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply):

<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B8)	<input checked="" type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Occur (C1) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)
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Secondary Indicators (minimum of two required):

<input checked="" type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> FAC-Neutral Test (F14) <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
--

Field Observations:

Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____
Saturation Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____

Wetland Hydrology Present? Yes \_\_\_\_\_ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project Site: Lena Gulch / SEA II STM City/County: Golden, Jefferson Sampling Date: 7/28/09  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-05  
Investigator(s): Ryan, Braus, Beatty, Wood Section, Township, Range: Sec 01 NE, T04S, R70W  
Landform (hill slope, terrace, etc.): constructed flood channel local relief (concave, convex, none): concave Slope (%): 1  
Subregion (LRR): G (Western Great Plains) Lat: 39.7361°N Long: -105.1715°W Datum: NAD83  
Soil Map Unit Name: Harrison loam NWI Classification: \_\_\_\_\_  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation N Soil XX or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes \_\_\_\_\_ No X  
Are Vegetation N Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	
Remarks: <u>High Precip Year, Constructed wetlands - well established wetland vegetation, planted in coarse riprap. Soil not well developed, water ponds in this area</u>			

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (D) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
Sapling/Shrub Stratum (Plot size: <u>15'</u> ) <u>0</u> = Total Cover				
1. <u>Salix exigua</u>	<u>3</u>	<u>Y</u>	<u>OBL</u>	
2. _____				
3. _____				
4. _____				
Herb Stratum (Plot size: <u>5'</u> ) <u>3</u> = Total Cover				
1. <u>Typha latifolia</u>	<u>60</u>	<u>Y</u>	<u>OBL</u>	
2. <u>Scheuchzeria palustris</u>	<u>30</u>	<u>Y</u>	<u>OBL</u>	
3. <u>Cirsium arvense</u>	<u>1</u>	<u>N</u>	<u>FACU</u>	
4. <u>Cenium maculatum</u>	<u>1</u>	<u>N</u>	<u>FACW</u>	
5. <u>Polygonum maritimum</u>	<u>3</u>	<u>N</u>	<u>OBL</u>	
6. <u>Chenopodium</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
7. <u>Juncus sp.</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
8. _____				
9. _____				
10. _____				
Woody Vine Stratum (Plot size: <u>5'</u> ) <u>103</u> = Total Cover				
1. _____				
2. _____				
% Bare (Ground in Herb Stratum) <u>5</u> <u>0</u> = Total Cover				
Remarks:				

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

SOIL

Sampling Point: NREL-C5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type	Loc	Texture	Remarks
0-8	10YR 3/2	80	7.5YR 5/8	20	C	M	SqC	Sandy Clay
8-20	10YR 3/2	100					SqCL	Sandy Clay, Loam

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Location: PL=Peat Lining, M=Melax.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils:

<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	<input checked="" type="checkbox"/> 1 cm Muck (A3) (LRR I, J)
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Coastal Prairie Redox (A16) (LRR F, G, H)
<input checked="" type="checkbox"/> Black Histic (A3)	<input checked="" type="checkbox"/> Stripped Matrix (S6)	<input checked="" type="checkbox"/> Dark Surface (S7) (LRR G)
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1)	<input checked="" type="checkbox"/> High Plains Depressions (F10)
<input checked="" type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input checked="" type="checkbox"/> LRR H outside of MLRA 72 & 73
<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> Reduced Vertic (F18)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	<input checked="" type="checkbox"/> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input checked="" type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input checked="" type="checkbox"/> High Plains Depressions (F10)	
<input checked="" type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input checked="" type="checkbox"/> (MLRA 72 & 73 of LRR H)	

Restrictive Layer (if present):

Type: NA  
Depth (inches): NA

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Constructed wetland - soil has not had time to develop + riprap makes sampling difficult

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

Secondary Indicators (minimum of two required)

<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Dry-Season Water Table (C2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input checked="" type="checkbox"/> (where filled)
<input checked="" type="checkbox"/> Muck Deposits (B3)	<input checked="" type="checkbox"/> (where not filled)	<input checked="" type="checkbox"/> Grayish Burrows (C8)
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> Irrundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input checked="" type="checkbox"/> Water-Strained Leaves (B9)		<input checked="" type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 1"  
Water Table Present? Yes ☒ No ☐ Depth (inches): 0"  
Saturation Present? Yes ☒ No ☐ Depth (inches): 0"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Constructed channel

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Lead Gulch/SEA # STM City/County: Golden, Jefferson Sampling Date: 7/29/09  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-06  
Investigator(s): Ryan, Brans, Beatty, West Section, Township, Range: Sec 21 NE, T 04 S, R 70 W  
Landform (hill slope, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 1  
Subregion (LRP): G (Western Great Plains) Lat: 39.7364°N Long: 105.1726°W Datum: NAD83  
Soil Map Unit Name: Englewood - Urban Land Complex NW classification: \_\_\_\_\_  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are 'Normal Circumstances' present? Yes X No \_\_\_\_\_  
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks: <u>High Precip Year</u>		

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>20'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-). <u>3</u> (A)
1. <u>Salix amygdaloides</u>	<u>40</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Populus deltoides</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Fraxinus pennsylvanica</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
4. <u>Gliricidia ulmifolia</u>	<u>5</u>	<u>N</u>	<u>NL</u>	
Total Cover: <u>75</u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)
Shrub/Straw Stratum (Plot size: <u>15'</u> )				
1. <u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>Y</u>	<u>FACW</u>	Prevalence Index worksheet: Total % Cover of _____ Multiply by: OBL species x 1 = _____ FACW species x 2 = _____ FAC species x 3 = _____ FAC- species x 4 = _____ UPL species x 5 = _____ Column Totals: (A) _____ (B) _____ Prevalence Index = B/A = _____
2. <u>Rosa waltkei</u>	<u>3</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Prunus virginiana</u>	<u>1</u>	<u>N</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
Total Cover: _____				
Herb Stratum (Plot size: <u>5'</u> )				
1. <u>Bromus inermis</u>	<u>70</u>	<u>Y</u>	<u>NL</u>	Hydrophytic Vegetation Indicators: <u>Y</u> Dominance Test is >50% <u>—</u> Prevalence Index < 3.0 <u>X</u> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>X</u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
2. <u>Dactylis glomerata</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
3. <u>Cirsium arvense</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
4. <u>Achillea millefolium</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
Total Cover: <u>95</u>				Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (Plot size: <u>5'</u> )				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum: <u>5</u> Total Cover: <u>95</u>				
Remarks: _____				

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

SOIL

Sampling Point NREL-06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Fractures				Texture	Remarks
	Color (muns)	%	Color (muns)	%	Trace	Loss		
0-19	10YR 6/3	100					FSa	Fine Sand
19-24	10YR 5/4	100					FSa	

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains, Location: PL=Pure Linings, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils	
<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)
<input checked="" type="checkbox"/> IFatic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)
<input checked="" type="checkbox"/> Black Histic (A3)	<input checked="" type="checkbox"/> Stripped Matrix (S6)
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1)
<input checked="" type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)
<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Expressions (I 8)
<input checked="" type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input checked="" type="checkbox"/> High Plains Depressions (F16)
<input checked="" type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input checked="" type="checkbox"/> (MLRA 72 & 73 of LRR H)

Restrictive Layer (if present):  
Type: NA  
Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes \_\_\_\_\_ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply):

<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Salt Crust (B*11)
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Aquatic Invertebrates (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input checked="" type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> (where not tilled)
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)
<input checked="" type="checkbox"/> Illumination Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Water Stained Leaves (B9)	

Secondary Indicators (minimum of two required):

<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B6)
<input checked="" type="checkbox"/> Drainage Patterns (B*3)
<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> (where tilled)
<input checked="" type="checkbox"/> Greyish Burrows (C8)
<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Geomorphologic Position (D2)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input checked="" type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____
Saturation Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____
(includes capillary fringe)	

Wetland Hydrology Present? Yes \_\_\_\_\_ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: High Bank = 6' from Creek



Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM Great Plains Region

Project/AS to: Lena Gulch/SEA # STM City/County: Golden, Jefferson Sampling Date: 7/29/07  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-07  
Investigator(s): Ryan, Brans, Beatty, Wood Section, Township, Range: Sec 01NE, T04S, R70W  
Landform (hill slope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 2  
Subregion (IIR): G (Western Great Plains) Lat: 39.7364°N Long: 105.1734°W Datum: NAD83  
Soil Map Unit Name: Englewood-Urban Land Complex NWI classification: \_\_\_\_\_  
Are climatic/hydrologic conditions on the site typical for this time of year? Yes Y No \_\_\_\_\_ (if no explain in Remarks)  
Are Vegetation 40% Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation 40% Soil N or Hydrology N naturally problematic? (if needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____		
Wetland Hydrology Present?	Yes <u>X</u> No _____		
Remarks: <u>High Precip Year</u>			

VEGETATION - Use scientific names of plants.

Tree Stratum	Pilot size	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet
1. <u>Salix amygdaloides</u>	<u>20</u>	<u>40</u>	<u>Y</u>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>5</u> (A)
2. <u>Eleagnus angustifolia</u>		<u>5</u>	<u>N</u>	<u>FAC</u>	
3. <u>Populus deltoides</u>		<u>15</u>	<u>Y</u>	<u>FAC</u>	
4. _____					
Sampling/Shrub Stratum (Pilot size: <u>15</u> )		<u>60</u> - Total Cover	Total Number of Dominant Species Across All Strata: <u>6</u> (B)		
1. _____			Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83.3</u> (A/B)		
2. _____			Prevalence Index worksheet		
3. _____			Total % Cover of: _____ Multiply by: _____		
4. _____			OBL species _____ x 1 = _____		
5. _____			FACW species _____ x 2 = _____		
Herb Stratum (Pilot size: <u>5</u> )			<u>0</u> - Total Cover	FAC species _____ x 3 = _____	
1. <u>Dactylis glomerata</u>		<u>5</u>	<u>N</u>	<u>FACW</u>	FACJ species _____ x 4 = _____
2. <u>Juncus tenuis</u>		<u>3</u>	<u>N</u>	<u>FACW</u>	UPL species _____ x 5 = _____
3. <u>Cirsium griseum</u>		<u>20</u>	<u>Y</u>	<u>FACW</u>	Column Totals: _____ (A) _____ (B)
4. <u>(Redtop) Agrostis scabra</u>		<u>5</u>	<u>N</u>	<u>FAC</u>	Prevalence Index - B/A = _____
5. <u>Juncus balticus</u>		<u>7</u>	<u>N</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators:
6. <u>Baccharis inermis</u>		<u>5</u>	<u>N</u>	<u>NL</u>	<u>Y</u> Dominance Test is >50%
7. <u>Typha latifolia</u>		<u>20</u>	<u>Y</u>	<u>OBL</u>	<u>N</u> Prevalence Index is ≤3.0
8. <u>Cynoglossum officinale</u>		<u>7</u>	<u>N</u>	<u>NL</u>	<u>N</u> Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
9. <u>Achillea millefolium</u>		<u>20</u>	<u>Y</u>	<u>FACW</u>	<u>N</u> Problematic Hydrophytic Vegetation? (Explain)
10. <u>Phalaris arundinacea</u>		<u>20</u>	<u>Y</u>	<u>FACW</u>	
Woody Vine Stratum (Pilot size: <u>5</u> )		<u>98</u> - Total Cover	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
1. _____			Hydrophytic Vegetation Present? Yes <u>X</u> No _____		
2. <u>Pantheroglossus quinquefolia</u>		<u>3</u>	<u>Y</u>	<u>FAC</u>	
% Bare Ground in Herb Stratum		<u>30</u> - Total Cover			
Remarks:					

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National Renewable Energy Laboratory South Table Mountain Site

SOIL

Sampling Point NREL-07

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Find	Loc	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-8	10YR 3/2	100					CSA	Many pores
8-14	10YR 2/1	100					CSA	Coarse sand

Type: C=Concentration, D=Detection, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

Location: PL=Fore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sancy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Hist. Expansion (A2)	<input type="checkbox"/> Sancy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (At6) (LRR F, G, H)
<input type="checkbox"/> Black Hist. (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (H1)	<input type="checkbox"/> High Plains Depressions (H1E)
<input type="checkbox"/> Stratified Layers (AS) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F7)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (T22)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Indicators of hydrophytic vegetation and
<input type="checkbox"/> 2.5 cm Mucky Peel or Peel (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	<input type="checkbox"/> wetland hydrology must be present,
<input type="checkbox"/> 5 cm Mucky Peel or Peel (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)	<input type="checkbox"/> unless disturbed or problematic.

Restrictive Layer (if present):

Type: rock/asphalt

Depth (inches): 14"

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Buried asphalt soil shows reducing conditions with a low chrome.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

<input checked="" type="checkbox"/> Surface Water (A*)	<input checked="" type="checkbox"/> Salt Crust (B11)
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Aquatic Invertebrates (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input checked="" type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> (Where not filled)
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks):
<input checked="" type="checkbox"/> Water-Stained Leaves (B8)	

Secondary Indicators (minimum of two required)

<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Bioturbation Patterns (B10)
<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> (Where filled)
<input checked="" type="checkbox"/> Crayfish Burrows (C6)
<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> FAC-Neutral Test (D6)
<input checked="" type="checkbox"/> Frost-Heave Mounds (D7) (LRR F)

Field Observations:

Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	5"
Water Table Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	10"
Saturation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches):	3"
(includes capillary fringe)			

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Lena Gulch/SEA # STM City/County: Golden, Jefferson Sampling Date: 7/29/09  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-08  
Investigator(s): Ryan, Brous, Beatty, Wood Section, Township, Range: Sec. 01NE, T04S, R70W  
Landform (hillslope, terrace, etc.): Floodwater channel Local relief (concave, convex, none): concave Slope (%): 2  
Subregion (ERR): G (Western Great Plains) Lat: 39.7359°N Long: -105.1733°W Datum: NAD83  
Soil Map Unit Name: Hansen loam NWL classification: \_\_\_\_\_  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
Are Vegetation N, Soil Y, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes Y No \_\_\_\_\_  
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No _____
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			
Remarks: <u>High Precip Year</u> <u>Constructed wetland</u>					

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>20'</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
Sapling/Shrub Stratum (Plot size: <u>15'</u> ) <u>0</u> = Total Cover				Prevalence Index worksheet: Total % Cover of _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) Prevalence Index = B/A = _____
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
Herb Stratum (Plot size: <u>5'</u> ) <u>0</u> = Total Cover				Hydrophytic Vegetation Indicators: V Dominance Test is >50% + Prevalence Index is >3.0 = Morphological Adaptations? (Provide supporting data in Remarks or on a separate sheet) N Problematic Hydrophytic Vegetation? (Explain)  Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Festuca arundinacea</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
2. <u>unk grass #2</u>	<u>5</u>	<u>N</u>	<u>---</u>	
3. <u>Scirpus pungens</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
4. <u>Polygala maritima</u>	<u>10</u>	<u>Y</u>	<u>OBL</u>	
5. <u>Ranunculus cuneifolius</u>	<u>3</u>	<u>N</u>	<u>NI</u>	
6. <u>Glycyrrhiza lepidota</u>	<u>3</u>	<u>N</u>	<u>FACU</u>	
7. <u>Equisetum arvense</u>	<u>1</u>	<u>N</u>	<u>FAC</u>	
8. <u>Alopecurus geniculatus</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
9. <u>Melilotus officinalis</u>	<u>1</u>	<u>N</u>	<u>FACU</u>	
10. <u>Conyza canadensis</u>	<u>1</u>	<u>N</u>	<u>FACU</u>	
Woody Vine Stratum (Plot size: <u>5'</u> ) <u>0</u> = Total Cover				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
1. _____				
2. _____				
% Bare Ground in Herb Stratum <u>55</u> <u>0</u> = Total Cover				
Remarks:				

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National Renewable Energy Laboratory South Table Mountain Site

SOIL

Sampling Point: NREL-08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Moisture		Redox Features		Type	Loc	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-7	10YR 3/3 8.0	7.5	10YR 5/8 2.0	2.0	C	M	S&C	Sandy clay
7-20	10YR 3/2 10.0	—	—	—	—	—	S&C	—

Type: G=Concretion, D=Depletion, RM=Reduced Matrix, CG=Covered or Coated Sand Grains, Location: PL=Pipe Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils:

<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Coast Prairie Redox (A10) (LRR F, G, H)
<input checked="" type="checkbox"/> Black Histic (A3)	<input checked="" type="checkbox"/> Striped Matrix (S6)	<input checked="" type="checkbox"/> Dark Surface (S7) (LRR G)
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1)	<input checked="" type="checkbox"/> High Plains Depressions (F10)
<input checked="" type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input checked="" type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> Reduced Value (F18)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (F62)
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	Indicators of hydrophytic vegetation and
<input checked="" type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input checked="" type="checkbox"/> High Plains Depressions (F13)	wetland hydrology must be present,
<input checked="" type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	(MLRA 72 & 73 of LRR H)	unless disturbed or problematic.

Restrictive Layer (if present):

Type: NA

Depth (inches): —

Hydric Soil Present? Yes ☒ No ☐

Remarks: Soil pit dug amid rip rip in a constructed wetland.  
Showing indications of reducing conditions

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply):

Secondary Indicators (minimum of two required):

<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	(where filled)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> (where not filled)	<input type="checkbox"/> Greyish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (U2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (J5)
<input type="checkbox"/> Water Stained Leaves (B9)		<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): —

Water Table Present? Yes ☐ No ☒ Depth (inches): —

Saturation Present? Yes ☐ No ☒ Depth (inches): —

(Includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available.

Remarks:

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National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/State: Long Gulch/Suppl. II EA STW City/County: Golden, Jefferson Sampling Date: 7/29/08  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-09  
Investigator(s): Ryan, Bruce, George, Wood Section, Township, Range: Soc 1 NE, T04S, R70W  
Landform (hill/slope, terrace, etc.): Ditch Local relief (concave, convex, none): Concave Slope (%): 2  
Subregion (LRR): G (Western Great Plains) Lat: 39.7362°N Long: -105.1754°W Datum: NAD83  
Soil Map Unit Name: Denver Urban Land Complex NW classification: \_\_\_\_\_  
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
Are Vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation N Soil N or Hydrology N naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u> No _____		
Remarks: <u>High Precip Year</u>			

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>10</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FACU): <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
Sapling/Shrub Stratum (Plot size: <u>10</u> ) <u>0</u> = Total Cover				
1. <u>Ostrya tomentosa</u>	<u>0.5</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Rosa woodsii</u>	<u>1</u>	<u>N</u>	<u>FACU</u>	
3. _____				
4. _____				
5. _____				
Herb Stratum (Plot size: <u>5</u> ) <u>6</u> = Total Cover				
1. <u>Samolus tetracaulum</u>	<u>6.5</u>	<u>Y</u>	<u>FACU</u>	
2. <u>Allium vineale</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Conium maculatum</u>	<u>0.5</u>	<u>N</u>	<u>FACU</u>	
4. <u>Cirsium vulgare</u>	<u>&lt;1</u>	<u>N</u>	<u>UPL</u>	
5. <u>Ambrosia artemisiifolia</u>	<u>&lt;1</u>	<u>N</u>	<u>FACU</u>	
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
Woody Vine Stratum (Plot size: <u>5</u> ) <u>90</u> Total Cover				
1. _____				
2. _____				
% Bare Ground in Herb Stratum <u>5</u> <u>0</u> = Total Cover				
Remarks:				Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic. Hydrophytic Vegetation Present? Yes _____ No <u>X</u>





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National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Long Gulch/SEA# STM City/County: Golden, Jefferson Sampling Date: 7/29/09  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-10  
Investigator(s): Ryan Brans, Beatty, West Section, Township, Range: Sec 01NE, T04S, R70W  
Landform (hill slope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0  
Subregion (LRR): G (Western Great Plains) Lat: 39.7330°N Long: -105.1737°W Datum: NAD83  
Soil Map Unit Name: Denver Urban Land Complex NW classification: \_\_\_\_\_  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks)  
Are Vegetation N Soil Y or Hydrology N significantly disturbed? Are Normal Circumstances present? Yes X No \_\_\_\_\_  
Are Vegetation N Soil N or Hydrology N naturally problematic? (if needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	
Remarks: <u>High Precip Year</u> <u>man-made depression feature - no inlet or outlet</u>		

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u> )	Absolute % Cover	Dominant Species?	Indicator	Dominance Test worksheet:
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)
2. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW or FAC: <u>0</u> (A/B)
4. _____				Prevalence Index worksheet:
Total % Cover of: _____ Multiply by: _____				
OBL species: _____ x 1 = _____				
FACW species: _____ x 2 = _____				
FAC species: _____ x 3 = _____				
FACU species: _____ x 4 = _____				
UPL species: _____ x 5 = _____				
Column Totals: (A) _____ (B) _____				
Prevalence Index = BA = _____				
Hydrophytic Vegetation Indicators:				
N Dominance test is >50%				
N Prevalence Index is <3.0				
N Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)				
N Problematic Hydrophytic Vegetation (Explain)				
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks:				

Shrub/Straw Stratum (Plot size: <u>15'</u> )	Absolute % Cover	Dominant Species?	Indicator
1. <u>Rosa woodsii</u>	<u>0</u>	<u>T</u>	<u>Y</u> <u>FACU</u>
2. _____			
3. _____			
4. _____			
5. _____			

Herb Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator
1. <u>Arnica montana</u>	<u>50</u>	<u>Y</u>	<u>FACU</u>
2. <u>Melilotus officinalis</u>	<u>10</u>	<u>N</u>	<u>FACU</u>
3. <u>Cirsium arvense</u>	<u>10</u>	<u>N</u>	<u>FACU</u>
4. <u>Festuca arundinacea</u>	<u>5</u>	<u>N</u>	<u>FACU</u>
5. <u>Lactuca scariola</u>	<u>5</u>	<u>N</u>	<u>FACU</u>
6. <u>Diemys japonica</u>	<u>3</u>	<u>N</u>	<u>FACU</u>
7. <u>Grindelia squarrosa</u>	<u>T</u>	<u>N</u>	<u>FACU</u>
8. _____			
9. _____			
10. _____			

Woody Vine Stratum (Plot size: <u>5'</u> )	Absolute % Cover	Dominant Species?	Indicator
1. _____			
2. _____			
% Bare Ground in Herb Stratum: <u>15</u>	<u>0</u>	<u>0</u>	<u>0</u> = Total Cover

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SOIL

Sampling Point: NREL-10

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	DOT	LOG		
0-17	10YR 4/2	100					CL	
17-20	10YR 5/4	60					SCL	Silty clay loam
	10YR 4/6	40					SCL	

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Location: PL=Pipe Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils <sup>1</sup>	Indicators of hydric vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> 1 cm Muck (A0) (LRR I, J)
<input checked="" type="checkbox"/> Histio Epipedon (A2)	<input checked="" type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input checked="" type="checkbox"/> Rank Histio (A3)	<input checked="" type="checkbox"/> Dark Surface (S7) (LRR C)
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> High Plains Depressions (F16)
<input checked="" type="checkbox"/> Stratified Layers (A5) (LRR F)	<input checked="" type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input checked="" type="checkbox"/> 1 cm Muck (A0) (LRR F, G, H)	<input checked="" type="checkbox"/> Reduced Vertic (F16)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A15)	<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	
<input checked="" type="checkbox"/> 2.5 cm Mucky Peel or Peel (S2) (LRR G, H)	
<input checked="" type="checkbox"/> 5 cm Mucky Peel or Peel (S3) (LRR F)	

Restrictive Layer (if present):

Type: NA

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required; check all that apply):

<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Salt Crust (B11)
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Aerial Invertebrates (B13)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input checked="" type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Dry-Season Water Table (C2)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> (where not tilled)
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Presence of Reduced Iron (C4)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Thin Muck Surface (C7)
<input checked="" type="checkbox"/> Foundation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	

Secondary indicators (minimum of two required):

<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B5)
<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> (where tilled)
<input checked="" type="checkbox"/> Crayfish Burrows (C8)
<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input checked="" type="checkbox"/> Frost-Heave Mounds (D7) (LRR F)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Large (3/4 acre) depression that is man-made

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Leona Gulch/SEA # STM City/County: Golden, Jefferson Sampling Date: 7/29/09  
Applicant/Owner: National Renewable Energy Lab State: CO Sampling Point: NREL-11  
Investigator(s): Ryan, Brans, Beatty, Wood Section, Township, Range: Sec 01 NE, T04S, R70W  
Lundform (hill slope, terrace, etc.): Drainage Swale Local relief (concave, convex, none): Concave Slope (%): 2  
Sohregion (LRR): G (Western Great Plains) Lat: 39.7369° Long: -105.1747°W Datum: NAD83  
Soil Map Unit Name: Denver Urban/Land Complex NWI classification: \_\_\_\_\_  
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks.)  
Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are 'Normal Circumstances' present? Yes X No \_\_\_\_\_  
Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: <u>High Precip Year</u> <u>originally, this swale was created by placing rip-rap</u>		

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>20</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-); _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
Sapling/Shrub Stratum (Plot size: <u>15</u> )				
1. <u>Salix erigera</u>	<u>60</u>	<u>Y</u>	<u>OBL</u>	Prevalence Index = B/A = _____ Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% _____ Prevalence Index is <3.0 <u>N</u> Morphological Adaptations? (If no, see supporting data in Remarks or on a separate sheet) <u>N</u> Problematic Hydrophytic Vegetation? (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. <u>Salix amygdaloides</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	
3. _____				
4. _____				
Herb Stratum (Plot size: <u>5</u> )				
1. <u>Cirsium arvense</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	Prevalence Index = B/A = _____ Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% _____ Prevalence Index is <3.0 <u>N</u> Morphological Adaptations? (If no, see supporting data in Remarks or on a separate sheet) <u>N</u> Problematic Hydrophytic Vegetation? (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. <u>Mentha arvensis</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Conium maculatum</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
4. <u>Glycyrrhiza lepidota</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
5. <u>Ranex crispis</u>	<u>10</u>	<u>Y</u>	<u>FACU</u>	
Woody/Vine Stratum (Plot size: <u>5</u> )				
1. _____				Prevalence Index = B/A = _____ Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% _____ Prevalence Index is <3.0 <u>N</u> Morphological Adaptations? (If no, see supporting data in Remarks or on a separate sheet) <u>N</u> Problematic Hydrophytic Vegetation? (Explain) Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____				
% Bare Ground in Herb Stratum: <u>15</u>				
Remarks: _____				

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

SOIL

Sampling Point: NREL-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix		Redox Features		Type	Loc	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-8	10YR 3/2	70	7.5YR 5/8	20	C	M	S&C	Sandy Clay
8-21	10YR 3/3	100					S&C	

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains, Location: PL=Fore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted)

<input checked="" type="checkbox"/> Histosol (A1)	<input checked="" type="checkbox"/> Sandy Gleyed Matrix (S4)	<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)
<input checked="" type="checkbox"/> Histic Epipedon (A2)	<input checked="" type="checkbox"/> Sandy Redox (S5)	<input checked="" type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)
<input checked="" type="checkbox"/> Black Histic (A3)	<input checked="" type="checkbox"/> Stripped Matrix (S6)	<input checked="" type="checkbox"/> Dark Surface (S7) (LRR G)
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1)	<input checked="" type="checkbox"/> High Plains Depressions (F16)
<input checked="" type="checkbox"/> Striped Layers (A5) (LRR F)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	<input checked="" type="checkbox"/> (LRR H outside of MLRA 72 & 73)
<input checked="" type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	<input checked="" type="checkbox"/> Reduced Vortic (F18)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	<input checked="" type="checkbox"/> Red Parent Material (TF2)
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Depleted Dark Surface (F7)	<input checked="" type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Sandy Mucky Mineral (S1)	<input checked="" type="checkbox"/> Redox Depressions (F8)	<input checked="" type="checkbox"/> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input checked="" type="checkbox"/> 2.5 cm Mucky Peel or Peel (S2) (LRR G, H)	<input checked="" type="checkbox"/> High Plains Depressions (F16)	
<input checked="" type="checkbox"/> 5 cm Mucky Peel or Peel (S3) (LRR F)	<input checked="" type="checkbox"/> MLRA 72 & 73 of LRR H	

Restrictive Layer (if present):

Type: NA

Depth (Inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks: Rip rap in silt

HYDROLOGY

Wetland Hydrology Indicators:

<input checked="" type="checkbox"/> Primary Indicators (minimum of one required, check all that apply)	<input checked="" type="checkbox"/> Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> (where tiled)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Grayish Burrows (C8)
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input checked="" type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Geographic Position (D2)
<input checked="" type="checkbox"/> Floodation Visible on Aerial Imagery (B7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D9)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> Frost-Heave Mounds (D7) (LRR F)

Field Observations:

Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (Inches): _____
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (Inches): _____
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (Inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site

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DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, OMAHA DISTRICT  
DENVER REGULATORY OFFICE, 9307 SOUTH WADSWORTH BOULEVARD  
LITTLETON, COLORADO 80128-6901

August 28, 2009

Mr. Steve Blazek  
Department of Energy  
Golden Field Office  
1617 Cole Boulevard  
Golden, CO 80401-3393

**RE: Lena Gulch Wetland Delineation Review Relevant to the National Renewable Energy  
Laboratory Supplemental Environmental Assessment for the South Table Mountain  
Facility  
Corps File No. NWO-2009-2120-DEN**

Dear Mr. Blazek:

Mr. Terry McKee of my office has reviewed your August 17, 2009 correspondence containing the wetland delineation report and map for this project located in the NE ¼ of Section 1, T4S, R70W, Jefferson County, Colorado. Mr. McKee considers your wetland report and map for this project accurate and acceptable.

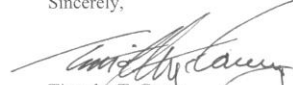
If any work associated with this project requires the placement of dredged or fill material, and any excavation associated with a dredged or fill project in Lena Gulch Stream bed or wetlands, this office should be notified by a proponent of the project for Department of the Army permits or changes in permit requirements pursuant to Section 404 of the Clean Water Act.

Work in Lena Gulch Stream bed or wetlands should be identified and be shown on a map identifying the Quarter Section, Township, Range and County and Latitude and Longitude, Decimal Degrees (datum NAD 83) and the dimensions of work in a stream bed or wetland. Any loss of an aquatic site may require mitigation. Mitigation requirements will be determined during the Department of the Army permitting review.

The Omaha District, Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete our Customer Service Survey found on our website at <http://per2.nwp.usace.army.mil/survey.html>. If you do not have Internet access, you may call and request a paper copy of the survey that you can complete and return to us by mail or fax. (Completing the survey is a voluntary action)

If there are any questions call **Mr. Terry McKee** of my office at **303-979-4120** and reference **Corps File No. NWO-2009-2120-DEN**.

Sincerely,

  
Timothy T. Carey  
Chief, Denver Regulatory Office

tm



## Department of Energy

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3305

September 1, 2009

Ms. Ellen Mayo  
U.S. Fish and Wildlife Service  
Ecological Services  
Western Colorado Field Office  
764 Horizon Drive, Building B  
Grand Junction, Colorado 81506-3946

Dear Ms. Mayo,

### RE: LENA GULCH ROAD CROSSING – GOLDEN, COLORADO

The U.S. Department of Energy (DOE) is proposing to establish a second full service access road to its South Table Mountain (STM) Complex to accommodate future growth at the facility. Four of DOE's proposed access corridors would cross Lena Gulch to create a southern route for STM access. Figure 1 presents the project area and the proposed corridors.

DOE is currently preparing an Environmental Assessment (EA) Supplement for five proposed Site Development Projects at the National Renewable Energy Laboratory's STM site:

- 1) Energy Systems Integration Facility (ESIF)
- 2) Expansion of campus infrastructure
- 3) Waste Handling Facility (WHF) expansion
- 4) Visitor's Center expansion
- 5) The addition of a second full service access road (secondary access) to STM

A rare plant survey is needed to determine baseline conditions for the secondary access portion of the EA and represents an effort by DOE to afford the U.S. Fish and Wildlife Service an opportunity to be involved early in project planning.

#### Project Location

The project location is north of I-70 and west of Denver West Parkway on a portion of the former Camp George West National Guard facility in Jefferson County. The land within the project area includes private land as well as land currently owned by Jefferson County Open Space and leased by the Pleasant View Metropolitan District (T04S, R70W, SEC 01, NE1/4 - Morrison Quadrangle- Figure 1). The UTM coordinates (NAD83) representing the upstream and downstream extents of the project area under consideration are upstream: Zone 13, 4398241mN, 484740mE; downstream: Zone 13, 4398582mN and 485724mE. Adjacent properties include the Pleasant View Subdivision to the west, NREL to the north, the Colorado State Patrol Academy and correctional facility to the south, and the Richards Heights subdivision and a larger private parcel to the east.

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Access to the project location is from South Golden Road and Kilmer Street (Figure 1). The majority of the project area is contained within Pleasant View Community Park with adjoining private parcels up- and down-stream of the park.

#### **Vegetation and Habitat**

Lena Gulch originates in the foothills in the Apex Park Open Space west of the Heritage Square Amusement Park. The gulch continues east and is often conveyed in concrete canals through the Golden area. Lena Gulch becomes forested as it crosses South Golden Road (into the project area) with typical tree species of riparian areas in eastern Colorado. After crossing two private parcels, Lena Gulch crosses into the Pleasant View Community Park and extends through the park for approximately ½ mile. Once the drainageway crosses back into private land, it again becomes channelized and adjacent land use encroaches as Lena Gulch continues through urban and suburban landscapes to its confluence with Clear Creek near the intersection of 44<sup>th</sup> Avenue and Kipling Street.

Common trees along this reach within Pleasant View Community Park include plains Cottonwood (*Populus deltoides*), Peachleaf Willow (*Salix amygdaloides*), Russian olive (*Elaeagnus angustifolia*), Green Ash (*Fraxinus pennsylvanica*), and Siberian Elm (*Ulmus pumila*) (Photo 1). Shrubs are localized along the riparian zone and include Chokecherry (*Prunus virginiana*), Wild Plum (*Prunus americana*), and Red Hawthorn (*Crataegus erythropoda*). Understory vegetation consists mostly of grasses including Smooth Brome (*Bromus inermis*), Reed Canarygrass (*Phalaris arundinacea*), and Tall Fescue (*Schedonorus phoenix*) (Photo 2).

Only a few locations supported plant species commonly associated with orchids. These include Field Horsetail (*Equisetum arvense*) and Goldenrod (*Solidago* spp.).

Upland vegetation includes grasses and a dominance of weedy herbs. Dominant plants include Western Wheat Grass (*Pascopyrum smithii*), Crested Wheat Grass (*Agropyron cristatum*), Smooth Brome, Cheatgrass (*Bromus tectorum*), and Fringe Sage (*Artemisia ludoviciana*).

#### **Hydrology and Landscape**

Lena Gulch is identified as an intermittent stream on the USGS Morrison Quadrangle map. However, given the level of urbanization upstream of the project area, the stream likely flows most of the year if not all year round. Lena Gulch has likely been channelized. Channelization often creates instability and active erosion and deposition that are extensive (Anderson 1999b). Consequently, Lena Gulch has an incised channel (Photo 3) throughout most of this reach and overbank flooding appears limited to a few locations. The Pleasant View Metro District has created a side channel to the south of the natural drainage for wetland mitigation and flood storage (Photo 4). This area was excavated and lined with rip-rap and is now supporting robust Cattail (*Typha latifolia*) stands and diverse wetland vegetation among and upgradient from the cattails.

The project area was recently delineated for wetlands and a map was created and submitted to the U.S. Army Corps of Engineers for approval. This effort helped with site familiarity and an understanding of hydric soils in the area. This information is available upon request but soil characteristics match closely with an earlier rare plant survey (Anderson 1999a).

### Site History and Management

The project area was formerly the Camp George West National Guard facility. The management of the site was for military training, administrative, and storage purposes. Remnant drainageways north of Lena Gulch support a patch (about  $\frac{1}{4}$  acre) of Sandbar Willow (*Salix exigua*). These drainage ways were more evident before recent park development that reworked drainage across the site.

Land formerly part of Camp George West has been following decommissioning since the late 1950's, but was likely disturbed and reworked during operations of Camp George West and during decommissioning. Over the last 10 years, Pleasant View Metro District has begun re-engineering the drainage patterns across the site and constructing ball fields and a parking lot. A constructed wetland was built south of Lena Gulch to reorient the floodplain to the south.

### Survey Methods

In accordance with the Endangered Species Act, we conducted a survey for the federally listed Ute ladies' tresses Orchid (*Spiranthes diluvialis*- Orchid) and the Colorado Butterfly Plant (*Gaura neomexicana coloradensis*- CBP). This survey was conducted over two site visits, on August 5<sup>th</sup> and again on August 19<sup>th</sup>, 2009 when local populations of orchids (Wheat Ridge and Boulder, Colorado) were known to be blooming.

All potential wetland and wetland fringe areas within the limits of the EA secondary access study area (project area) were surveyed for the presence of orchids in accordance with the current interim guidelines published by the U.S. Fish and Wildlife Service (USFWS 1992). The project area was also surveyed for CBP. Tom Ryon, a prequalified *Spiranthes diluvialis* surveyor, led a team of 3 biologists conducting the surveys. Mr. Ryon's qualifications are available upon request.

Potential habitat areas at Lena Gulch, as identified by areas with common associated plant species for the orchid and a general knowledge of wetlands within the project area, were walked in a 5 to 10-foot grid pattern and the understory was carefully observed. Small drainages were walked along the length of both banks in potential habitat areas.

### Survey Results and Conclusion

This is the second time the Lena Gulch area has been surveyed for these two federally protected plants. Anderson (1999a) conducted a survey of the Camp George West site for a park development project for the Pleasant View Metropolitan District. This report is available from NREL upon request.

The results of the survey revealed no orchids or CBP within the project area along Lena Gulch and adjoining tributaries. All potential habitat areas exhibiting vegetative or hydrologic potential were surveyed. Although suitable hydrologic conditions exist along Lena Gulch and in the lower reaches of various tributaries, only two species commonly associated with the orchid occurred. Field Horsetail (*Equisetum arvense*) and Goldenrod (*Solidago* spp.). Soils on this site generally do not appear to be conducive to the establishment of the orchid or CBP (Anderson 1999a). Recent soil observations during wetland delineations support Anderson's (1999a) findings.

After two surveys, confirming only marginal habitat conditions at the site, and considering the site history that *Spiranthes diluvialis* and *Gaura neomexicana coloradensis* do not exist within this project area, DOE concludes that these species are not present in or adjacent to Lena Gulch in the identified project area.

DOE requests that USFWS provide written concurrence to this habitat assessment, if USFWS agrees with the disqualification. For further questions or concerns regarding this assessment, please contact Tom Ryon (303-275-3252) or myself at 303-275-4723.

Sincerely,



Steve Blazek, NEPA Compliance Officer

Cc: Adam Mizstak – U.S. Fish and Wildlife Service  
Pete Plage – U.S. Fish and Wildlife Service  
Tom Anderson – Pacific Northwest Labs  
Chris Carasone – DOE, Golden Field Office  
John Lickhoff – EHS, NREL  
Tom Ryon – EHS, NREL

#### References

Anderson & Company. 1999. Ecological Assessment at Camp George West park site. Prepared for Pleasantview Metropolitan District and The Norris Dullea Company. July. 10+ tables.

Anderson & Company. 1999. *Spiranthes diluvialis* Survey of the Camp George West Park Site. Prepared for Pleasant View Metropolitan District and The Norris Dullea Company. July. 10+ photos and appendix.

Colorado Native Plant Society. 1997. Rare Plants of Colorado, Second Edition.

United States Department of the Interior, Fish and Wildlife Service. 1992. FEW/CO:ES Plants – *Spiranthes diluvialis* (Ute ladies'-tresses orchid). Interim. Survey requirements for *Spiranthes diluvialis*.

United States Department of Agriculture, Soil Conservation Service. 1980. Soil survey of the Golden Area, Colorado. Online: < [http://soils.usda.gov/survey/online\\_surveys/](http://soils.usda.gov/survey/online_surveys/)> and < <http://websoilsurvey.nrcs.usda.gov/>>

Weber, W.A. 1990. Colorado Flora: Eastern Slope. University Press of Colorado, Niwot, Colorado.







Photo 1. Riparian forest gallery line Lena Gulch.



Photo 2. Understory along Lena Gulch is primarily grasses.





Photo 3. Lena Gulch is incised for most of its length through the Pleasant View Park.



Photo 4. Constructed wetlands and flood storage channel adjacent to the south bank of Lena Gulch.



Final Supplement-II to Final Site-Wide Environmental Assessment:  
National Renewable Energy Laboratory South Table Mountain Site



Department of Energy

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401 3305

September 1, 2009

Ms. Ellen Mayo  
U.S. Fish and Wildlife Service  
Ecological Services  
Western Colorado Field Office  
764 Horizon Drive, Building B  
Grand Junction, Colorado 81506-3946

U.S. FISH AND WILDLIFE SERVICE	
<input checked="" type="checkbox"/> CONCUR NO EFFECT	
<input type="checkbox"/> CONCUR NOT LIKELY TO ADVERSELY AFFECT	
<input type="checkbox"/> NO COMMENT	
<i>Susan C. Linner</i>	SEP 24 2009
COLORADO FIELD SUPERVISOR	(2410)
Susan C. Linner	

Dear Ms. Mayo,

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